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10/30/02  
AR&E Docket No. 28951/3

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of : Bernard Daskal  
Serial No. : 09/489,655  
Filed : January 24, 2000  
For : COLORED PANTY LINERS  
Examiner : Catharine L. Anderson  
Group Art Unit : 3761

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Name: Brian Comack

Signature: *Brian Comack*

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**APPEAL BRIEF**

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

The following Appeal Brief is submitted pursuant the Notice of Appeal filed on August 19, 2002 in the above-identified Patent Application.

(1) REAL PARTY IN INTEREST

The party named in the caption of this Appeal Brief, Mr. Bernard Daskal, of 240 Randall Avenue, Lawrence, New York 11559, is the real party in interest.

(2) RELATED APPEALS AND INTERFERENCES

None.

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(3) STATUS OF CLAIMS

Claims 1 and 5-7, the only claims pending in this Application, stand under final rejection, from which this Appeal is taken. Claims 2-4 have been cancelled and are not on Appeal. Attached hereto as Exhibit 1 is a copy of Claims 1 and 5-7 of the present Application.

(4) STATUS OF AMENDMENTS

No amendment has been filed subsequent to final rejection.

(5) SUMMARY OF INVENTION

The present invention is directed to a feminine hygiene pad that is worn in the crotch portion of an undergarment which comprises: a central body fluid absorbent core having a body facing side and an undergarment facing side; a fluid permeable topsheet overlaid on the body facing side of the central body fluid absorbent core and having a **dark color (such as black, brown or red)**; and a fluid impermeable backsheet overlaid on the undergarment facing side of the central body fluid absorbent core and placed in register with the fluid permeable topsheet. (See Application, p. 5, lines 5-12 (emphasis added)). An advantage of the present invention is that it allows practitioners of the Rabbinic Decree concerning *Niddah*, as explained herein, to avoid the need of consulting with a Rabbi whenever a questionable non-menstrual vaginal stain appears on the feminine hygiene pad.

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It is known in the art to color various portions of feminine hygiene pads. For example, the prior art clearly teaches the desirability of using whitish pigmentation in the topsheets of feminine hygiene pads. (See Application, p. 3, lines 7-17). In this regard, the fluid permeable topsheets in commercially available panty liners are typically white or off-white. (*Id.*). It is also known in the art to make topsheets in light, pastel colors such as peach and pink for the purpose of masking “certain absorbed materials with a resulting pleasing color”, as disclosed in U.S. Patent No. 4,801,494 to Datta (“the Datta Patent”, copy attached as Exhibit 2). (See the Datta Patent, Col. 3, lines 40-41 and 46-48). Similarly, it is known to make topsheets in other colors, such as blue, blue-green and green, for the purpose masking fluids, as disclosed in U.S. Patent No. 5,188,625 to Van Iten *et al.* (“the Van Iten Patent”, copy attached as Exhibit 3). (See the Van Iten Patent, Col. 11, lines 6-23). Although useful for the purpose of masking, these colors are unacceptable for the purposes of the present invention.

More particularly, *Taharat Hamishpachah* is the Hebrew term for a set of millennial-old Jewish laws and customs regarding sexual relations. (See Application, p. 3, lines 18-19). Among its practitioners, who are mostly Orthodox Jews, its observance is sacred. (*Id.* at p. 3, lines 19-20). At the heart of the practice is a simple rule against sexual relations whenever a woman experiences bleeding from her uterus, whether during her normal menstrual period or at any other time. (*Id.* at p. 3, lines 20-22). During this time,

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and the seven days immediately thereafter, a wife has the status of a “*Niddah*” and is forbidden from having sexual relations with her husband. (*Id.* at p. 3, lines 22-27).

In an effort to overcome the Examiner’s previous rejections, Applicant submitted a “Rule 1.132 Declaration Of Rabbi Shmuel Neiman” (copy attached as Exhibi 4) explaining the rules of *Taharat Hamishpachah*, and specifically, the factors a Rabbi would consider in determining whether non-menstrual vaginal staining renders a woman a *Niddah*. As explained by Rabbi Nieman, a woman will have the status of a *Niddah* if she experiences any vaginal staining, subject to certain exceptions. (See Ex. 4, Nieman Declaration, par. 4). In this regard, a woman who experiences such staining will “be a *Niddah* unless: the stain is smaller than the size of a *gris* (a Talmudic-era measurement approximately the size of a penny); the stain is discovered on a surface that is incapable of becoming *Tumay* (a prohibitive Scriptural status -- clothing, for example, is capable of becoming *Tumay* whereas the ground is not); the stain [itself] is blue, green or yellow; or ***the stain is found on a ‘colored’ surface***”. (*Id.* at par. 4 (emphasis added)). Thus, the only relevant inquiry in determining whether a stain would render a woman a *Niddah* is whether or not a stain falls under one of these exceptions. *Id.* If it does not fall under one of these exceptions, then the woman will have the status of a *Niddah*.

The claims of the instant Application relate particularly to the fourth exception, *i.e.*, whether the stain is found on a “colored” surface -- hereinafter referred to as “the

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Colored Surface Exception”. Rabbi Nieman explained in his declaration the colors which would fall under the Colored Surface Exception of the Rabbinic Decree concerning *Niddah* as follows:

a significant number of Rabbis would rule that only dark colors, such as black, brown and red would fall under the colored-surface exception . . . Likewise, the same Rabbi[s] would rule that other colors, such as blue, green, blue-green, pink, peach and other pastel and light colors, are non-colored surfaces as used in the context of the Rabbinic Decree concerning *Niddah*.

(Nieman Declaration, par. 6). In other words, many Rabbis would rule that feminine hygiene pads known in the art, such as those that are not dark colors, including white, off-white, blue, blue-green, green, pink, peach and other pastels, as disclosed in the Van Iten and Datta Patents, are not “colored” surfaces for the purposes of determining whether a female has the status of a *Niddah*. Dark colored feminine hygiene pads, such as black, brown and red, by contrast, would be deemed “colored” surfaces by the same Rabbis.

There are many circumstances in which a woman experiences staining outside of her menstrual cycle, thereby raising the issue as to whether such stain accords the woman the status of a *Niddah*. (See Ex. 4, Nieman Declaration, par. 5). Where such questions arise, practitioners of *Taharat Hamishpachah* will consult a competent Rabbi to rule on whether the stain falls under any of the four exceptions. (*Id.*). If the stain does not fall under one of these exceptions, then the wife will be declared a *Niddah* despite the fact that such stain occurred outside of the wife’s menstrual cycle. (*Id.*). If the stain falls under one of the four

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exceptions, then the woman will not have the status of *Niddah*. Thus, with respect to the Colored Surface Exception, the Rabbi's determination necessarily hinges on the color of the garment on which the stain resides. Further, as explained by Rabbi Nieman, a stain on a dark colored surface, such as black, brown or red, as taught by the present invention would fall under the Colored Surface Exception according to all Rabbinic authorities whereas the same stain on a non-dark colored surface (i.e., blue, green, blue-green, pink, peach and other pastels), as taught by the Van Iten and Datta Patents, would not. Thus, the color of the garment, and not the actual type of stain on the garment, could ultimately determine whether or not a woman has the status of *Niddah*.

To avoid this result, the topsheet of the feminine hygiene pad of the present invention is made to be a dark color, such as black, brown or red, thereby making it impossible for a woman to be declared a *Niddah* when non-menstrual staining occurs on the topsheet. Despite the fact observant Jews have been following the *Taharant Hamishpachah* for millennia, and the prior art has taught how to color the topsheet of a feminine hygiene pad for over a decade, prior to the present invention, no one taught to color the topsheet of a feminine pad in dark colors, such as black, brown or red.

(6) ISSUES

- A. Where, as here, the prior art of record does not teach or suggest **all** of the elements of Claims 1 and 5-7, and in particular, the required dark,

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black, brown or red topsheet of these claims, did the Examiner fail to carry her burden of establishing a *prima facie* case of obviousness of these claims?

- B. Where, as here, the prior art of record discloses the use of pink, peach, pastels, blue, blue-green and green sanitary napkins, and these colors have been established by a Rule 1.132 Declaration to teach away from the present invention since they do not fall under the Colored Surface Exception of the Rabbinic Decree concerning *Niddah*, did the Examiner err in relying on these references to reject the claims as obvious since the use of these prior art colors would render Claims 1 and 5-7 inoperable for their intended purpose?
- C. Where, as here, the Examiner has not provided any reason for rejecting Claims 5-7, should these rejections be immediately withdrawn and the Claims allowed?

(7) GROUPING OF CLAIMS

Group I: Claim 1.

Group II: Claims 5-7.

The rejected Claims 1 and 5-7 have been grouped together in each of the rejections. Appellant respectfully submits that the claims of the group do not stand or fall

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together, the claims in Groups I and II being considered to be separately patentable for reasons set forth in detail below.

(8) SUMMARY OF THE FINAL REJECTION

In the final Office Action dated May 29, 2002, Claims 1 and 5-7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Datta Patent. In particular, in her rejection of these claims, the Examiner acknowledged that the Datta Patent does not disclose a dark colored topsheet, as required by Claim 1. (See Final Office Action at p. 2-3, copy attached as Exhibit 5)(the Datta Patent discloses “the claimed invention with the **exception** of a dark colored topsheet” (emphasis added)). Rather, the Datta Patent discloses lightly colored sanitary napkins, such as pink, peach and other pastels. (*Id.* at p. 3). However, the Examiner nevertheless concluded that since these “relatively light colors” are disclosed in the Datta Patent as “effectively masking stains caused by blood and discharge”, these “light colors . . . effectively perform the same purpose as the dark colors

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of the claimed invention.”<sup>1</sup> *Id.* Accordingly, the Examiner rejected the claims as being obvious over the Datta Patent under Section 103. *Id.*

Similarly, Claims 1 and 5-7 were rejected under Section 103 as being obvious in view of the Van Iten Patent. Here again, the Examiner acknowledged that the Van Iten Patent does not disclose a dark colored topsheet, as required by Claim 1. (*Id.*) (the Van Iten Patent discloses the claimed invention with the “exception of a dark colored topsheet”). In this regard, the Examiner noted that the purpose of the Van Iten Patent, which discloses a sanitary napkin having a blue or green cover, is to “mask stains caused by menstrual fluids”. (*Id.*) Accordingly, Examiner rejected Claims 1 and 5-7 for the same reasons as provided with respect to the Datta Patent. (*Id.*) Here again, the colors disclosed in the Van Iten Patent are unacceptable for the purposes of the present invention. *Supra* fn 1.

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<sup>1</sup> As should be appreciated from the “Summary Of Invention”, *supra* at p. 2-6, the purpose of the present invention is **not** to mask stains, but rather relates to the Colored Surface Exception of the Rabbinic Decree concerning *Niddah*. Nevertheless, there is no teaching one way or the other anywhere in the prior art of record as to whether dark colors will even mask all types of stains. Further, dark colored top sheets, such as black, brown or red, have been shown to be ineffective in masking light vaginal stains, such as stains caused by leukorrhea (e.g., a whitish vaginal discharge that occurs in pregnant women). (See “Rule 1.132 Declaration Of Sherry Daskal”, pars. 5-6, Ex. 6). Moreover, as explained herein below, the light colors disclosed in the Datta Patent are unacceptable for the purposes of the present invention.

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(9) ARGUMENT

As set forth in further detail in Sections (9)A-C *infra*, the Examiner's rejection of Claims 1 and 5-7 is contrary to controlling Federal Circuit precedent for the following reasons:

1. To render a claim obvious under 35 U.S.C. §103, the prior art, alone or in combination, must disclose or suggest **all** of the elements of the claims. See *In re Thrift*, 2002 WL 1830720, at \*\*7 (Fed. Cir. 2002) ("the Board's obviousness decision is not supported by substantial evidence because the cited references do not support **each limitation** of Claim 11" (emphasis added)). In the Final Office Action dated May 29, 2002, the Examiner states that the Van Iten Patent and the Datta Patent disclose the claimed elements, "with the **exception** of a dark colored topsheet". Nevertheless, since the Van Iten and Datta Patents disclose other colors (e.g., blue, green, blue-green, pink, peach and other pastels) for the purposes of masking - - a different purpose than the present invention - - the Examiner concludes, without pointing to any teaching in the prior art, that "dark colors", as required by Claim 1, would also mask stains. Indeed, dark colors have been shown in practice to be ineffective in masking, for example, light, non-menstrual stains such as leukorrhea. Thus, Examiner appears to have based her rejection of the claims on her own knowledge or on hindsight. To do so, however, is improper. *In re Fine*, 837 F.2d 1071, 1075 (Fed.Cir. 1988) ("to imbue one of ordinary skill in the art with knowledge of the invention in suit, when **no prior art reference** or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher"). Accordingly, since the cited prior art does not, as the Examiner acknowledges, disclose or suggest a dark colored topsheet (as required by Claim 1) or a black, brown or red topsheet (as required by Claims 5-7) for the alternative purpose of masking stains, the Datta and Van Iten Patents cannot, as a matter of law, be used to render the claims obvious under Section 103.

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2. The Datta and Van Iten Patents teach away from the claimed invention, and therefore, it is improper to use these patents for the purpose of a Section 103 obviousness rejection. See *Tec Air, Inc., v. Denso Manufacturing Michigan Inc.*, 192 F.3d 1353, 1360 (Fed. Cir. 1999) (stating “[t]here is no suggestion to combine . . . if a reference teaches away from its combination with another source . . . If [a reference] ‘would produce a seemingly inoperable device’, then [it] teach[es] away”). As set forth in the Declaration of Rabbi Nieman, a woman will be declared a *Niddah* where there are stains on her garment, unless, *inter alia*, the stain falls on a “colored” surface. As stated by Rabbi Nieman, according to all Rabbinic authorities, dark colors, such as black, brown and red, would be deemed a colored surface for the purposes of the Rabbinic Decree concerning *Niddah*. Thus, a non-menstrual stain on such dark colored surfaces would not render a woman a *Niddah*. Other colored surfaces, such as blue, green, blue-green, pink, peach and other pastels, by contrast are not “colored” surfaces for the purposes of the Rabbinic Decree concerning *Niddah*. Accordingly, the same non-menstrual stains on these colored panty liners may render the woman a *Niddah*, and thus, render the combination inoperative for the purposes taught in the specification of the present Application. Since the surfaces disclosed in the prior art are unacceptable for the purposes disclosed in the specification, they teach away for the present invention. Accordingly, the rejection should be withdrawn for this additional reason.

3. In her rejection, the Examiner failed to address Claims 5-7 of the present application. In this regard, Examiner only applied the prior art to the “dark color” requirement of claim 1. However, Examiner did not explain why the prior art rendered a black, brown or red topsheet as obvious, as required by Claims 5-7. *In re Rouffet*, 149 F.3d 1350, 1358 (Fed. Cir. 1998) (“**the examiner must show reasons** that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed.”)(emphasis added). Accordingly, since Examiner has not provided any basis for rejecting these claims, it is respectfully submitted that Claims 5-7 do not stand or fall together with Claim 1. Thus, since Examiner has not provided any basis for rejecting Claims

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5-7, it is respectfully submitted that these claims are in a condition for allowance. Thus, it is respectfully requested that this rejection be withdrawn and, at minimum, Claims 5-7 be allowed.

A. Examiner Failed To Establish A *Prima Facie* Case Of Obviousness Because The Datta and Van Iten Patents Do Not Even Suggest All Of The Claim Limitations of Claims 1 and 5-7

By the Examiner's own admission, the prior art discloses all of the elements of Claim 1, with the "exception of a dark colored topsheet". Thus, since this claim element is not taught by the prior art, the Examiner has failed to meet her burden of establishing a *prima facie* case of obviousness under 35 U.S.C. §103. See *In re Thrift*, 298 F.3d 1357, 63 U.S.P.Q.2d 2002 (Fed. Cir. 2002) ("the Board's obviousness decision is not supported by substantial evidence because the cited references do not support **each limitation** of Claim 11" (emphasis added)); see also *In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. 1125 (Fed. Cir. 1984) ("[t]he mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification") (internal citations omitted); *Manual of Patent Examining Procedure*, 2143.03 (8th ed. 2001) (in order to establish a *prima facie* case of obviousness, "all the claim limitations must be taught or suggested by the prior art.").

More particularly, in her Rejection, the Examiner notes that the Datta Patent discloses a topsheet made with pastel colors, such as peach and pink for the purpose of masking stains caused by blood and discharge. Similarly, the Examiner notes that the Van

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Item Patent discloses a topsheet which may be blue or green for the purpose of masking menstrual fluids. Although neither patent discloses or suggests that dark colors, such as black, brown or red (as required by the Claims) would be effective for masking stains, the Examiner nevertheless concluded that the colored topsheets of the Datta and Van Item Patents “perform the same purpose as the dark colors of the present invention”,<sup>2</sup> and therefore, the Examiner held that it would have been “obvious to one of ordinary skill in the art at the time of the invention to make the cover 10 of Datta [and cover 184 of Van Item] in the colors of the instant invention”.

In support of her rejection, the Examiner cites *Ex parte Obiaya*, 227 U.S.P.Q. 58, 60 (Bd. Pat. App. & Inter. 1985). In *Ex parte Obiaya*, the Board provided that “[t]he fact that [a patent applicant] has recognized another advantage which would flow naturally from following the **suggestion** of the prior art cannot be the basis for patentability when the differences would otherwise be obvious.” 227 U.S.P.Q. at 60 (emphasis added).<sup>3</sup>

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<sup>2</sup> Masking is not a purpose of the “dark colors of the present invention”. Rather, as discussed above, the purpose of the present invention relates to the Rabbinic Decree concerning *Niddah*. Therefore, the colored topsheets of the Datta and Van Item Patents cannot be said to perform the “same purpose of the dark colors of the present invention.”

<sup>3</sup> In *Ex parte Obiaya*, the claims at issue related to a sensor having a combustion fluid and concentration analyzer. 227 U.S.P.Q. at 59. The claims required, *inter alia*, a “heater” for maintaining a sample at a constant temperature. *Id.* The Board noted that the prior art disclosed **all** of the claimed elements, including the claimed “heater”. *Id.* at 60. Applicants presented evidence to show that a new advantage not taught in the prior art was realized from using the heater. *Id.* However, the Board

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Relying on this principle, the Examiner held that although masking is not the purpose of the present invention, the use of a dark topsheet is nevertheless “another advantage which would naturally flow from” the Datta and Van Iten Patents.

The Examiner’s reliance on *Ex parte Obiaya* is misplaced. In this regard, unlike *Ex parte Obiaya*, neither the Datta Patent nor the Van Iten Patent discloses or suggests **all** of the claimed elements, and thus, Applicant cannot be said to have merely realized a new advantage for a combination of elements which was otherwise known in the art. More specifically, there is no teaching anywhere in the prior art of record which even suggests that dark colors, such as black, brown or red, would even be operative to achieve the purpose of masking, as taught in the prior art. Rather, the prior art only teaches that light colors, such as pink, peach and other pastels (*See* the Datta Patent, Col. 3 , lines 39-49) and other non-dark colors, such as blue, green and blue-green (*See* the Van Iten Patent, Col. 11, lines 22-23) could be used for masking stains. The prior art is simply silent as to whether dark colors would be effective for masking such stains.<sup>4</sup> Absent such teachings, it appears

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rejected this argument, holding that this new advantage of the heater, which was disclosed in the prior art references, would have “flowed naturally from the suggestion of the prior art”. *Id.* Accordingly, that examiner’s obviousness rejection was upheld. *Id.* In other words, unlike the situation here, the prior art taught **all** of the claimed elements, and therefore, the new advantages realized from that which was already known in the art was insufficient to overcome a Section 103 rejection of an otherwise obvious claim.

<sup>4</sup> Contrary to Examiner’s unsupported rejection, dark colors have in fact been shown to be ineffective for masking many types of stains. For example, where there was a

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that the Examiner based her rejection of Claims 1 and 5-7 solely on her own knowledge or on hindsight. To do so, however, is entirely improper, and thus, the Examiner's rejection should be withdrawn. *See In re Lee*, 277 F.3d 1338, 1344-45, 61 U.S.P.Q.2d 1430 (Fed. Cir. 2002) (the "factual question of motivation [to combine] is material to patentability, and could not be resolved on subjective belief and unknown authority"); *see also In re Fritch*, 972 F.2d 1260, 1266, 23 U.S.P.Q.2d 1780 (Fed. Cir. 1992) ("one cannot use hindsight reconstruction to choose among isolated disclosures in the prior art to deprecate the claimed invention"); *In re Fine*, 837 F.2d 1071, 1075, 5 U.S.P.Q.2d 1596 (Fed.Cir. 1988) ("to imbue one of ordinary skill in the art with knowledge of the invention in suit, when **no prior art reference** or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher").

Accordingly, since the Datta and Van Iten Patents do not teach or suggest **all** of the elements of Claims 1 and 5-7 (i.e., the use of dark colored topsheets, including black, brown or red), Applicant has not merely realized a new advantage for a known combination of elements, as was the case in *Ex parte Obiaya*. Rather, Applicant has realized a new

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white stain, such as leukorrhea, on a black, brown or red topsheet, this stain was not masked. (See Daskal Declaration, pars. 4-5, Ex. 6). Moreover, the fact that a stain is masked by a blue topsheet as taught by the Van Iten Patent would also render the invention inoperable, since in such a situation the Rabbi would not be able to avoid declaring the woman a *Niddah* even though the discharge is masked.

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combination of elements which address a long felt need in the observant Jewish community. *See Para-Ordnance Mfg. v. SGS Importers Int'l.*, 73 F.3d 1085, 1094, 37 U.S.P.Q.2d 1237 (Fed. Cir. 1994)(long-felt need is persuasive of non-obviousness). Thus, *Ex Parte Obiaya* is inapplicable to the Claims at hand.

Accordingly, it is respectfully requested that the standing rejections to Claims 1 and 5-7 be withdrawn and these claims be allowed.

B. The Datta And Van Iten Patents Teach Away From The Present Invention Since Their Teachings Render It Inoperable For Its Intended Purpose

Additionally, the Examiner's Section 103 obviousness rejection of Claims 1 and 5-7 is improper because the Datta and Van Iten Patents teach away from the present invention. *See Tec Air, Inc., v. Denso Manufacturing Michigan Inc.*, 192 F.3d 1353, 1360, 52 U.S.P.Q.2d 1294 (Fed. Cir. 1999) (stating "[t]here is no suggestion to combine . . . if a reference teaches away from its combination with another source . . . If [a reference] 'would produce a seemingly inoperable device', then [it] teach[es] away"); *see also* MPEP 2145, Par. X.D.2 ("It is improper to combine references where the references teach away from their combination"). Similarly, a prior art reference cannot be relied upon to reject a claim as obvious under Section 103 where the teachings of such reference would render a claimed invention inoperable for its intended purpose. *See McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1354, 60 U.S.P.Q.2d 1001 (Fed. Cir. 2001)("if references . . . would produce a

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‘seemingly inoperative device’ . . . , such references teach away from the combination and thus cannot serve as predicates for a prima facie case of obviousness” (citing to *In Re Spinnoble*)); *In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. 1125 (Fed. Cir. 1984) (where prior art “would render [the claimed invention] inoperable for its intended purpose . . . [, the prior art] teaches away from the board’s proposed modification”); *In Re Spinnoble*, 405 F.2d 578, 587, 160 U.S.P.Q. 237 (C.C.P.A. 1969) (finding that references teach away from a combination if the combination would produce an inoperable device); *see also* MPEP 2143.01 (“If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is so suggestion or modification to make the proposed modification”).

The purpose of the present invention is to provide a feminine hygiene pad which according to all Rabbinic authorities vitiates the need of female practitioners of *Taharat Hamishpachah* from having to seek counsel from a Rabbi as to whether a questionable, non-menstrual stain would render such female a *Niddah*. More particularly, the present invention provides a dark colored (including, black, brown or red) feminine hygiene pad which squarely falls under the Colored Surface Exception to Rabbinic Decree concerning *Niddah*.

As noted herein, a woman will have the status of a *Niddah* where there are certain types and sizes of stains on her garment, unless, *inter alia*, the stain falls on a “colored” surface. (Ex. 4, Nieman Declaration, par. 4). Dark colored surfaces, such as black, brown

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and red surfaces, would be deemed a “colored” surface for the purposes of the Rabbinic Decree concerning *Niddah*. *Id.* at 6. Thus, a non-menstrual stain on such dark colored surfaces would not render a woman a *Niddah*. Surfaces which are not dark in color, such as blue, green, blue-green, pink, peach and other pastels, by contrast, are not deemed to be a “colored” surface for purposes of the Rabbinic Decree concerning *Niddah*. *Id.* Accordingly, the same non-menstrual stains on these non-dark colored surfaces may render the woman a *Niddah*.

Claims 1 and 5-7 require that the topsheet of the claimed feminine hygiene pad be a dark color, such as black, brown or red. As noted above, these colors would fall under the Colored Surface Exception of the Rabbinic Decree concerning *Niddah*. The Datta and Van Iten Patents, by contrast, teach away from using sanitary napkins having colors which would fall under the Colored Surface Exception. In this regard, the Datta Patent discloses the use of sanitary napkins which are provided with a pink, peach or pastel colorant. (Col. 3, lines 39-41). Likewise, the Van Iten Patent discloses the use of sanitary napkin whose top surface (i.e., cover) has a blue, blue-green or green color. (Col. 11, lines 22-23). Since the colors taught by the Datta and Van Iten Patents do not fall under the Colored Surface Exception, the use of such colors on a feminine hygiene pad would render Claims 1 and 5-7 inoperable for purposes of the present invention. Therefore, these patents cannot be relied

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upon to render Claims 1 and 5-7 obvious. *See McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1354 (Fed. Cir. 2001).

Accordingly, it is respectfully requested that the rejection be withdrawn and the claims allowed for this additional reason.

C. The Examiner Failed To Provide A Basis For Rejecting Claims 5-7

Finally, we note that Examiner has not provided a reason for rejecting Claims 5-7, and thus, has provided no guidance to Applicant as to whether to continue prosecution of this Application. *In re Rouffet*, 149 F.3d 1350, 1358, 47 U.S.P.Q.2d 1453 (Fed. Cir. 1998) (“***the examiner must show reasons*** that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed.”(emphasis added)); *see also* 37 C.F.R. 1.104(a)(2) (“the reasons for any adverse action . . . will be stated in an Office action and such information or references will be given as may be useful in aiding the applicant . . . to judge the propriety of continuing the prosecution”). As will be seen below, the Examiner failed to provide her “reasons” for rejecting Claims 5-7, and as a result, it was necessary for Applicant to file this Appeal to assess whether to pursue continued prosecution of these claims. To Applicant’s detriment, significant expenses have been incurred in filing this Appeal which may have been avoidable had reasons been provided for rejecting Claims 5-7. Further, since Examiner failed to

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provide Applicant with a basis for rejecting Claims 5-7, these claims cannot stand or fall together with Claim 1.

Claims 5-7 require, *inter alia*, a black, brown or red topsheet in a feminine hygiene pad. Claim 1, by contrast, requires a “dark colored” topsheet. In her rejection, the Examiner addresses Claims 1 and 5-7 together. However, in applying the Datta and Van Iten Patents to the Claims, the Examiner focuses only on the requirement of Claim 1 that the topsheet be a “dark color”. In this regard, the Examiner points to various passages in the Datta and Van Iten Patents as purportedly rendering the “dark color” requirement obvious. However, the Examiner failed to specifically address the requirement of Claims 5-7 that the topsheet be black, brown and red, respectively. In this regard, the Examiner did not point to anything in the prior art that would render Claims 5-7 obvious or provide a reason why these Claims were rejected, but rather boot strapped them to Claim 1 without explanation or comment.<sup>5</sup> Nevertheless, Applicant believes that Claims 5-7 are patentable over the Datta and Van Iten Patents for the reasons specified herein.

In view of the fact that the Examiner has not provided any specific reason for rejecting Claims 5-7, and further in view of the fact that the prior art of record does not

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<sup>5</sup> In an abundance of caution and in anticipation of any similar rejections being entered with respect to Claims 5-7, Applicant has treated Examiner’s rejection with respect to the dark colored topsheet (i.e., Claim 1) as being applicable to Claims 5-7, even though it is clear that Examiner failed to specifically provide her reasons for rejecting these Claims.

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disclose or suggest the use of black, brown or red topsheets, as required by these claims, it is respectfully requested, at minimum, that the Examiner's rejection with respect to Claims 5-7 be withdrawn and these claims be allowed.

### CONCLUSION

For the reasons advanced above, Applicant respectfully submits that Claims 1 and 5-7 are, as a matter of law, are patentable over the Datta and Van Iken Patents. Accordingly, Applicant respectfully requests reversal of the rejections from which this Appeal was taken and allowance of Claims 1 and 5-7.

A check in the amount of \$160.00 is enclosed to cover the fee for filing this Appeal Brief for a small entity. No additional fees or extensions of time are believed to be necessary for the filing of this Brief. However, if any additional fees are required in connection with the filing of this Brief, including extension of time fees, please charge the Deposit Account No. -1-1785 of the undersigned attorneys. Copies of this Brief in triplicate are enclosed.

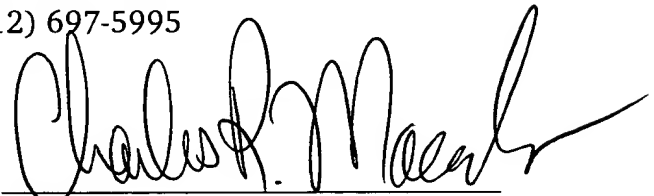
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Filed : January 24, 2000  
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Dated: New York, New York  
October 18, 2002

By:



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## CLAIMS ON APPEAL

1. A feminine hygiene pad that is worn in the crotch portion of an undergarment, said feminine hygiene pad comprising:

a central body fluid absorbent core having a body facing side and an undergarment facing side;

a fluid permeable topsheet overlaid on said body facing side of said central body fluid absorbent core and having a dark color; and

a fluid impermeable backsheet overlaid on said undergarment facing side of said central body fluid absorbent core and placed in register with said fluid permeable topsheet.

5. A feminine hygiene pad that is worn in the crotch portion of an undergarment, said feminine hygiene pad comprising:

a central body fluid absorbent core having a body facing side and an undergarment facing side;

a fluid permeable, black topsheet overlaid on said body facing side of said central body fluid absorbent core; and

a fluid impermeable backsheet overlaid on said undergarment facing side of said central body fluid absorbent core and placed in register with said fluid permeable topsheet.

6. A feminine hygiene pad that is worn in the crotch portion of an undergarment, said feminine hygiene pad comprising:

a central body fluid absorbent core having a body facing side and an undergarment facing side;

a fluid permeable, brown topsheet overlaid on said body facing side of said central body fluid absorbent core; and

a fluid impermeable backsheet overlaid on said undergarment facing side of said central body fluid absorbent core and placed in register with said fluid permeable topsheet.

7. A feminine hygiene pad that is worn in the crotch portion of an undergarment, said feminine hygiene pad comprising:

a central body fluid absorbent core having a body facing side and an undergarment facing side;

a fluid permeable, red topsheet overlaid on said body facing side of said central body fluid absorbent core; and

a fluid impermeable backsheet overlaid on said undergarment facing side of said central body fluid absorbent core and placed in register with said fluid permeable topsheet.

# United States Patent [19]

Datta et al.

[11] Patent Number: 4,801,494

[45] Date of Patent: Jan. 31, 1989

[54] NONWOVEN PAD COVER WITH FLUID MASKING PROPERTIES

[75] Inventors: Paul J. Datta, Winnebago County; Gary C. Anderson, Outagamie County; Bernhardt E. Kressner, Winnebago County, all of Wis.

[73] Assignee: Kimberly-Clark Corporation, Neenah, Wis.

[21] Appl. No.: 36,936

[22] Filed: Apr. 10, 1987

[51] Int. Cl.<sup>4</sup> ..... A61F 13/16; D04H 3/14; D04H 5/06

[52] U.S. Cl. .... 428/283; 428/284; 428/286; 428/287; 428/296

[58] Field of Search ..... 428/283, 284, 286, 287, 428/296

[56] References Cited

## U.S. PATENT DOCUMENTS

3,886,942 10/1975 Bernardin ..... 128/290  
4,077,410 1/1978 Butterworth et al. .... 128/287  
4,333,979 7/1982 Sciaraffa et al. .... 428/179  
4,341,213 4/1982 Cohen ..... 128/284  
4,472,328 11/1984 Sugimoto et al. .... 264/41

4,483,897 9/1984 Fujimura et al. .... 428/288  
4,519,799 10/1985 Sakurai et al. .... 604/366

## FOREIGN PATENT DOCUMENTS

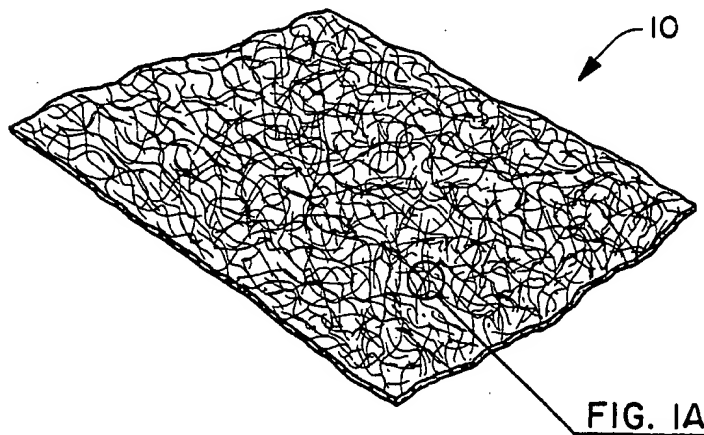
0140560 3/1985 European Pat. Off. .  
0164740 7/1985 European Pat. Off. .  
0172420 8/1986 European Pat. Off. .

Primary Examiner—Marion C. McCamish  
Attorney, Agent, or Firm—Paul A. Leipold; Thomas J. Connelly

[57] ABSTRACT

A spunbonded liner material having a heavy loading of pigment, formed of a heavier denier than normal spunbonded fiber in a lightweight fabric. In a particularly preferred embodiment, the fibers are formed of polypropylene and the pigment is formed of titanium dioxide present in an amount between about 1 and about 6 percent by weight of the fabric. The fabric material further has an open area of between about 25 and about 50 percent with an average pore size of between about 15,000 and 35,000 square microns and a fiber denier of greater than 3. Masking is greater than two times conventional nonwovens.

10 Claims, 3 Drawing Sheets



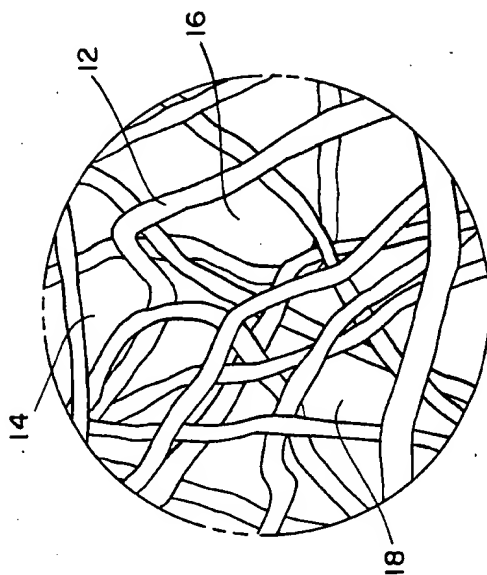


FIG. 1A

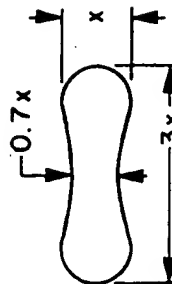


FIG. 6

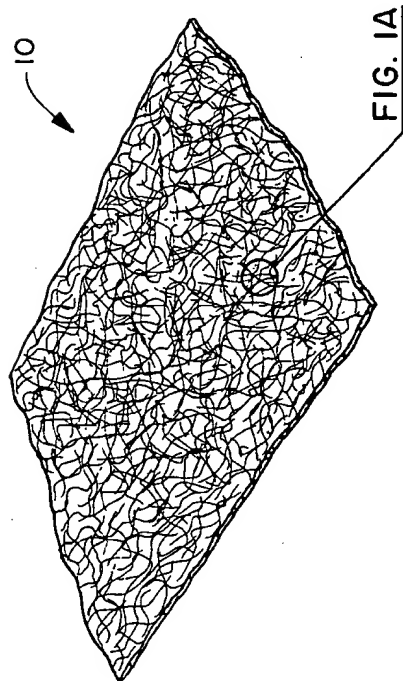


FIG. 1

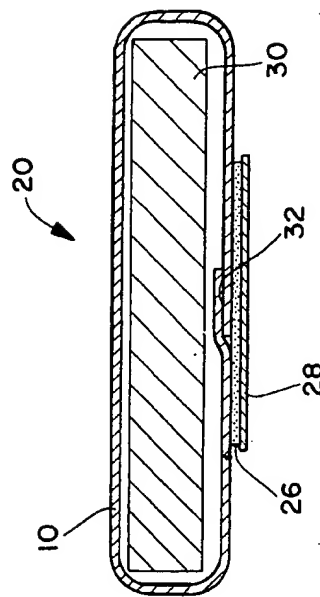


FIG. 5

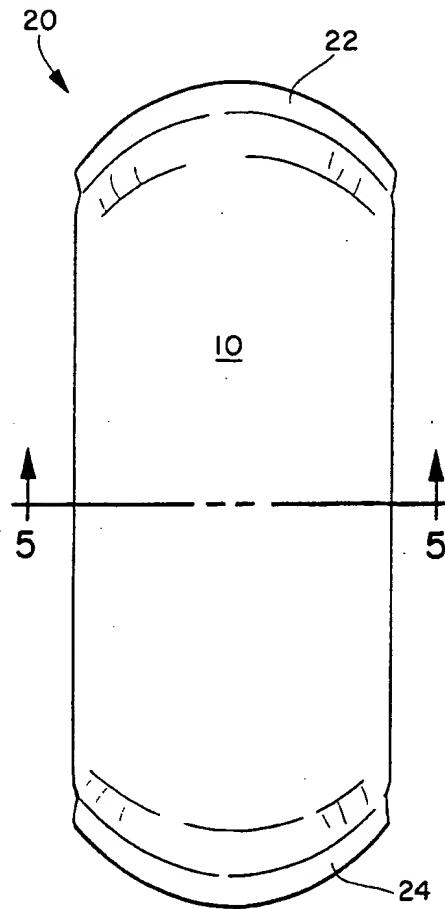


FIG. 2

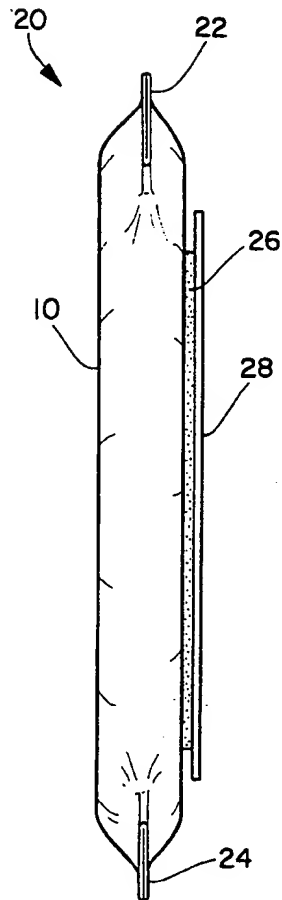


FIG. 3

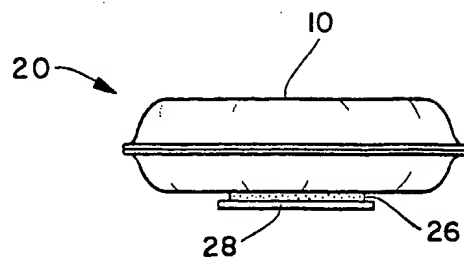


FIG. 4

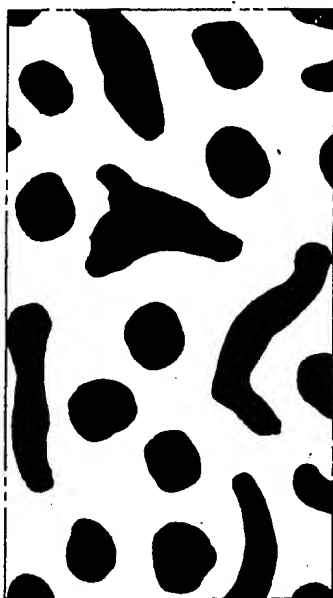


FIG. 7



FIG. 8

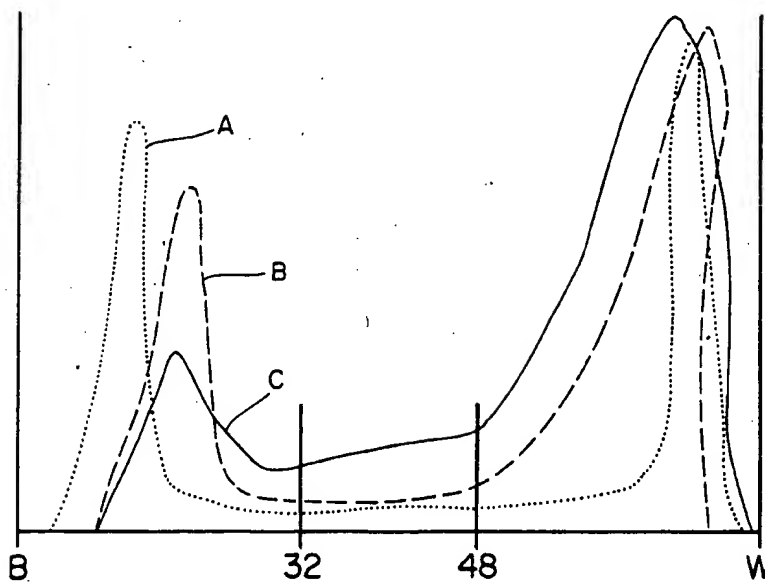


FIG. 9

## NONWOVEN PAD COVER WITH FLUID MASKING PROPERTIES

### FIELD OF THE INVENTION

This invention relates to bodyside liner material for products for absorbing human exudate. It particularly relates to materials for the bodyside liners of sanitary napkins.

### BACKGROUND OF THE INVENTION

The formation of absorbent garments for use as diapers, incontinent garments or feminine care products has generally involved the combination of an impermeable backing material, a bodyside permeable member and an absorbent placed therebetween. The body exudate placed upon the pad is intended to pass through the liquid permeable layer and be absorbed by the absorbent. The liquid impermeable backing material prevents the exudate from passing through the pad and staining the clothes of the wearer. It has been found that the consumer would prefer not to look at the exudate absorbed by the pad. Therefore, there has been a desire to provide pads for absorption of human exudate with permeable members that will mask exudate that is absorbed within the pad.

It has been proposed the perforated film materials be utilized for the bodyside liners of feminine care pads and diaper garments. Such materials are disclosed in European Patent Application No. 0,039,974. However, these materials have the disadvantage that many users consider them unpleasantly hot and sticky to wear when against the skin. Perforated film materials having a high loading of the opacifying agent and an open area of between 1.3 and 35 percent of the total area of the facing have been disclosed in European Patent Application No. 0,172,420.

Spunbonded materials have been used as cover materials for pads for absorption of human exudate. Spunbonded webs are disclosed in U.S. Pat. No. 3,886,942 - Bernardin. U.S. Pat. No. 4,333,979 - Sciaraffa et al. - suggests the use of titanium dioxide to make a liner sufficiently opaque to cover discoloration. It has also been proposed in U.S. Ser. No. 774,252 filed Sept. 9, 1985 - Van Iten et al. to perforate standard spunbond cover material to increase its ability to pass small clots and improve appearance.

There remains a need for a low weight, large pore liner material that is low in cost, provides good masking of materials absorbed into a pad and is not hot or uncomfortable to the wearer.

Masking is beneficial to the customer by giving a perception of cleanliness. Masking is measured as the reduction in intensity of a black pattern beneath the surface of a pad cover. Masking is measured instrumentally using image analysis equipment.

### THE INVENTION

An object of this invention is to overcome disadvantages of prior cover materials.

Another object of this invention is to provide a cover material that will pass a majority of the particulates in menses.

An additional object of the invention is to provide fast absorbency of bodily exudates.

A further object is to provide a pad cover having a dry surface after absorption.

A further additional object is to provide a cover with good hiding of bodily exudates.

These and other objects are generally accomplished by providing a spunbonded liner fabric material having a heavy loading of pigment in fibers of a heavier denier than generally formed into a spunbonded fabric of lightweight. In a particularly preferred embodiment, the fibers are formed of polypropylene and the pigment is titanium dioxide present in an amount between about 1 and about 6 percent by weight. The cover material further has an open area of between about 25 and about 50 percent with an average pore size of between about 15,000 and 35,000 square microns (on pores larger than 50 microns in equivalent circular diameter (ECD)) and an average fiber denier greater than 3. The preferred fabric weight is between about 0.28 and about 0.50 oz. per square yard with or without a surface wetting agent.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a view of a spunbonded web in accordance with the invention.

FIG. 1a is an exploded view of section 1a of FIG. 1.

FIG. 2 is a plan view of a sanitary napkin of the invention.

FIG. 3 is a side view of a sanitary napkin of FIG. 2.

FIG. 4 is the end view of the sanitary napkin of FIG. 2.

FIG. 5 is a cross-sectional view of the pad of FIG. 2 on line 5-5 of FIG. 2.

FIG. 6 is a cross-sectional view of a bilobal fiber utilized in the spunbonded material of the invention.

FIG. 7 is an illustration of a black and white test pattern such as used in evaluating masking power.

FIG. 8 is an illustration of a black and white test pattern covered by a white liner material.

FIG. 9 is a graphic representation of a comparison of masking powers as measured optically.

### MODES FOR CARRYING OUT THE INVENTION

The instant invention has numerous advantages over prior cover materials. The cover of the invention is low in cost as it is lightweight and formed of relatively heavy denier spunbonded filaments. The larger filaments are easier to extrude and the lightweight of the web lowers cost as less polymer is used. Further, the relatively large open area allows passing of small clots in menstrual fluid for presenting a cleaner surface. Further, by having a large open area, liquids supplied to the cover are absorbed faster, and the cover both feels and looks drier and cleaner. Additionally, as the cover is formed with a large open area, additional perforating or stretching steps to increase pore area are not necessary. The spunbonded cover of the invention also is soft to the touch and provides good masking of materials absorbed into absorbent pads covered by the cover material of the invention. These and other advantages of the invention will become apparent from the detailed description below.

FIG. 1 and the exploded view of FIG. 1a illustrate a web 10 in accordance with the invention. The web is formed of spunbonded filaments. The spunbonded filaments are formed by extrusion of continuous polymer filaments onto a moving substrate. The filaments are somewhat molten when laid down on the substrate and become adhered to each other at their intersections. It is also possible that the interfiber bonding structure of the

spunbonded material may be increased by passing it through heated calender rolls or subjecting it to heated air to aid in fusion between the filaments. It is also possible that the filaments may be united by a binder material. As illustrated in FIG. 1a, the filaments 12 are of fairly thick diameter and have relatively large interstices such as 14, 16 and 18 formed between the filaments.

Illustrated in FIGS. 2-5 is a feminine pad 20 that is provided with the cover of the invention. The permeable cover 10 forms the bodyside of feminine napkin 20. Feminine napkin 20 is sealed at ends 22 and 24. The napkin further is provided with an adhesive 26 covered by a release paper 28. As shown in the cross-section of Figure 5, the feminine pad 20 has absorbent 30 wrapped with the permeable cover 10. The permeable member 10 is overlapped in area 32 where the garment attachment adhesive 26 serves to seal the overlapped area 32 as well as providing garment attachment.

While illustrated with a feminine napkin, the permeable cover of the invention finds use in other devices for absorption of human exudate. Typical of such devices are incontinent garments, bandages, diapers, bed pads and wound dressings. The material may be surfactant treated if desired to aid liquid wetting of the spunbond material. It is preferred for feminine pads that the material be surfactant treated.

The polymer forming the spunbonded material of the invention may be any material that results in a desirable spunbonded product. Typical of such materials are copolymers of polypropylene and polyethylene, linear low-density polyethylene, other polyolefins and polyesters. A particularly preferred material is meltspinnable polypropylene, particularly fiber-grade high-isotactic polypropylene. The polypropylene is preferred as it is low in cost, readily spinnable and provides a good feel to the fabric material formed from the fiber.

It is preferred that the fiber of the invention be provided with a colorant. It is considered that suitable colorants are light pink, peach and other pastel colors. A preferred color is a white color, preferably formed by titanium dioxide. Titanium dioxide is preferred as it is inert, heat stable, very white and easy to process. An alternate white material would be calcium carbonate. The pastel colors may be preferred in some instances to mask certain absorbed materials with a resulting pleasing color.

The fiber diameter of the instant fabric material may be any larger spunbonded diameter that gives good strength, feel and masking or hiding ability. Suitable are fibers of between about 3 and about 15 denier. Preferred for round cross-section fibers are fibers of about 4 to about 6 denier as these have good tactile feel but result in a nonwoven that has a fairly large average aperture size in the material weights utilized. A particularly preferred round fiber has a denier of between about 4.5 and about 5.5 for good tactile feel. In the instance of bilobal fibers, they may suitably be between about 4 and about 15 denier. A preferred bilobal fiber denier is between about 6 and about 10 for a good feel and desired aperture size in the product. The optimum denier for bilobal fibers of polypropylene is considered to be about 6 as these have best tactile feel and hiding power of fluid absorbed. As illustrated in FIG. 6, bilobal fiber has a cross-section that is generally in a dog-bone or hourglass shape.

While the typical cross-sections of fibers are round or bilobal, it is possible that any cross-section could be utilized in the invention.

The nonwoven fabric of the invention may be formed in any average aperture or pore size (larger than 50 microns ECD) which produces the desired hiding power and ability to pass fluids and small clots. A suitable range of average pore size is between about 15,000 and 100,000 square microns. A preferred average pore size (larger than 50 microns ECD) is between about 15,000 and about 35,000 square microns for good menstrual fluid penetration, masking properties and feel. The optimum average pore size is considered to be between about 30,000 and about 35,000 square microns for a fabric that provides good masking of materials absorbed as well as the ability to pass clots and other solid portions through the cover to the absorbent. The average pore size is measured by an image analysis testing procedure.

The titanium dioxide colorant may be present in any desired amount that gives sufficient opacity to the fiber to provide good masking of materials absorbed. The titanium dioxide colorant may suitably be between about 1 and about 6 percent by weight of the finished web. A preferred range is about 3 and about 4 percent for ease of formation, low cost and good hiding or masking ability of the material absorbed.

The fabric forming the permeable cover of the invention may be any desired weight. A preferred weight is between about 0.28 and about 0.5 ounce per square yard for good masking of material absorbed and to provide enough filaments in the cover to provide a uniform look to the nonwoven with large pore size and reasonable strength.

The masking power or hiding power of the nonwoven fabric of the invention is substantially improved from the conventional nonwoven spunbonded materials utilized in many diapers and feminine care products. A measuring system has been established to determine the improvement in masking ability. It has been found that the materials of the invention have a masking improvement of at least 2 and up to about 20 times the masking power of the conventional spunbonded materials.

The method utilized for determining the improvement and hiding powers is illustrated in the accompanying drawing of FIGS. 7, 8 and 9. In FIG. 7, there is illustrated a black and white test pattern. FIG. 8 is an illustration of the black and white test pattern when it is covered with a liner. As can be seen, the test pattern, when covered with the liner, appears gray where the black formerly appeared. A liner with good hiding power has the ability to change most of the black to a gray. The more gray and the less black, then the better the liner. As illustrated in FIG. 9, the liner of the invention is compared with a standard spunbond liner material such as presently utilized on KOTEX™ feminine care products. The left side of the graph indicates the amount of the area that is black. The right is the amount of white. The range of black to white has been divided into 64 equal increments for image analysis. The area between 32 and 48 has been found to be particularly pertinent in establishing of masking power as perceived by a person looking at a covered pattern. It is believed that this is important, as when the gray area from 32 to 48 is significantly increased, the black peak disappears. In this invention description, when it is stated that the masking power is increased two times, it is meant that the area under the curve between 32 and 48 has been

doubled from the standard spunbond liner. If the masking power has been increased three times over the standard liner, the area between 32 and 48 of the curve has been tripled. As illustrated in FIG. 9, there are three patterns shown. The uncovered black and white pattern A has, as would be expected, high peaks in the black area and the white area of the graph. The standard spunbond liner, Curve B, has a sizable black peak as well as a large white peak. The Curve C indicating the liner of the invention has more than doubled the area between 32 and 48 and greatly minimized the black peak.

The following examples are intended to be explanatory and not inclusive of all forms of the invention. Parts and percentages are by weight unless otherwise indicated.

#### EXAMPLE 1

A spunbond, continuous filament polypropylene web is formed as described in Sciaraffa, et al., U.S. Pat. No. 4,333,979, Example I. The polypropylene polymer (i.e., Himont PC-973) is melted in a conventional extruder and spun as continuous filaments through a spinnerette plate. The web is collected at speeds of 700 feet/minute and bonded by hot calendering with a pattern having approximately 27 bonds per square centimeter with a total bond area of  $25\% \pm 5\%$ . The bonding is accomplished by passing the spunbonded web through the above-mentioned pattern roll and a smooth calender roll. Both rolls are heated to  $280^\circ \text{F}$ . The resulting material has the properties found in the following Table I. White pigment (i.e.,  $\text{TiO}_2$ ) was added via melt addition at a level of 4.5 percent by weight. The material is formed into feminine pads and found to have good ability to pass clots and provide masking of liquid absorbed into the pad. Masking of this web is 5.5 times the masking of a similar web with 1.0%  $\text{TiO}_2$ .

TABLE I

Example 1	
Fiber Cross Section	Round
Fiber Denier	4.5
Basis Weight (oz./yd <sup>2</sup> )	0.34
Average Pore Area (sq. microns)	24,000
Open Area (%)	45
Pigment Loading (%)	4.5
Surfactant	no

#### EXAMPLE 2

Example 1 is repeated except the extrusion die holes are formed such that the fiber cross-section is bilobal having a shape shown in FIG. 6. As shown in FIG. 6, the bilobal fiber has a cross-section of hourglass or dog bone shape with the long dimension about three times the narrower dimension.

The bonded material is found to have the properties found in the following Table II. The material is formed into feminine pads and found to have good masking ability and a good ability to pass clots.

TABLE II

Example 2	
Fiber Cross Section	Bilobal
Fiber Denier	3.7
Basis Weight (oz./yd <sup>2</sup> )	0.39
Average Pore Area (sq. microns)	17,000
Open Area (%)	34
Pigment Loading (%)	4.5

TABLE II-continued

Example 2	
Surfactant	no

#### EXAMPLE 3

Example 1 is repeated except that the percent  $\text{TiO}_2$  was  $1\frac{1}{2}\%$ ,  $2\frac{1}{2}\%$ , and  $3\frac{1}{2}\%$ . Each material is found to have good masking ability and good ability to pass clots.

#### EXAMPLE 4

Example 2 is repeated except that the polymer used is linear low density polyethylene (Dow 61800.05). A web with the material properties in Table III is formed. A feminine pad is formed of the web material. The pad is found to exhibit good stain masking and the ability to pass small clots.

TABLE III

Example 4	
Fiber Cross Section	Bilobal
Fiber Denier	4.2
Basis Weight (oz./yd <sup>2</sup> )	0.4
Average Pore Area (sq. microns)	11,300
Open Area (%)	36
Pigment Loading (%)	4.5
Surfactant	no

#### EXAMPLE 5

Example 1 is repeated except that the denier is increased to 5.5 at a basis weight of 0.42 oz./yd<sup>2</sup> and an average pore area of 15,600 (sq. microns). A feminine pad is formed of the web material. The pad is found to exhibit good stain masking and the ability to pass small clots.

While described for primary use as a bodyside cover for pads designed to be used for absorption of human exudate, the nonwoven material of the invention also may be used for other products. Typical of such other uses for which it is suited are the formation of disposable garments such as face masks, operating gowns and drapes. Other uses would be as an agricultural fabric to filter sunlight or provide a mulch. The invention is only intended to be limited by the breadth of the claims attached hereto.

We claim:

1. A permeable nonwoven bodyside cover material for products for absorption of human exudate comprising a pigmented spunbonded web wherein the fibers in said web have a denier of greater than 3 and contain greater than 1 percent colorant and wherein said spunbonded web has an average pore size of about 15,000 to about 100,000 sq. microns, an open area of between about 25 and about 50 percent and a weight of between about 0.28 and 0.5 ounce per square yard.
2. The cover of claim 1 wherein said cover comprises bilobal filaments of between about 4 and about 15 denier.
3. The cover of claim 1 wherein said filament has a round cross-section and a filament denier of between about 4 to about 6.
4. The cover of claim 1 wherein said cover has an open area of between about 30 and about 35 percent.
5. The cover of claim 1 wherein said fibers comprise polypropylene.

6. The cover of claim 1 wherein said fibers comprise between about 1 and about 6 percent by weight titanium dioxide.

7. The cover of claim 1 wherein the average pore size is between about 15,000 and about 35,000 square microns.

8. The cover of claim 1 wherein said filament has a generally round cross-section and an average denier of between about 3 and about 15.

9. A nonwoven material comprising pigmented filaments greater than 3 denier formed into a nonwoven web wherein said nonwoven web has a fabric weight of

between about 0.28 and about 0.50 oz/yd<sup>2</sup> and a pore size of between about 15,000 and about 30,000 square microns.

10. A pad for absorption of bodily exudate comprising a liquid permeable bodyside nonwoven web, a liquid impermeable backing material and an absorbent therebetween wherein said nonwoven material comprises pigmented filaments of greater than 3 denier formed into a nonwoven web wherein said nonwoven web has a fabric weight of between about 0.28 and 0.50 oz/yd<sup>2</sup>.

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US005188625A

**United States Patent** [19]

Van Iten et al.

[11] Patent Number: **5,188,625**[45] Date of Patent: **Feb. 23, 1993**[54] **SANITARY NAPKIN HAVING A COVER FORMED FROM A NONWOVEN WEB**[75] Inventors: **Thomas P. Van Iten, Neenah; Howard A. Whitehead, Appleton; Julie A. Schindel, Oshkosh, all of Wis.**[73] Assignee: **Kimberly-Clark Corporation, Neenah, Wis.**[21] Appl. No.: **569,317**[22] Filed: **Aug. 17, 1990**

4,219,376	8/1980	Roman	156/209
4,248,822	2/1981	Schmidt	264/154
4,276,336	6/1981	Sabee	428/132
4,321,924	3/1982	Ahr	128/287
4,323,069	4/1982	Ahr et al.	128/287
4,324,246	4/1982	Mullane et al.	128/287
4,340,563	7/1982	Appel et al.	264/518
4,341,217	7/1982	Ferguson et al.	128/290 W
4,342,314	8/1982	Radel et al.	128/287
4,397,644	8/1983	Matthews et al.	
4,469,734	9/1984	Minto et al.	428/134
4,634,440	1/1987	Widlund et al.	604/383
4,886,632	12/1989	Van Iten et al.	264/156

**Related U.S. Application Data**

[63] Continuation-in-part of Ser. No. 61,844, Jun. 11, 1987, which is a continuation of Ser. No. 774,252, Sep. 9, 1985, abandoned.

[51] Int. Cl.<sup>3</sup> ..... **A61F 13/15**[52] U.S. Cl. .... **604/383; 604/385.1**[58] Field of Search ..... **604/383, 385.1**[56] **References Cited****U.S. PATENT DOCUMENTS**

2,115,122	4/1938	Prudden	99/77.1
2,332,848	10/1943	Grabec	154/2
2,748,863	6/1956	Benton	164/99
3,097,124	7/1963	Denenberg	154/44
3,104,998	9/1963	Gelpke	161/109
3,137,893	6/1964	Gelpke	18/4
3,161,554	12/1964	Blackford	156/242
3,227,854	1/1966	Ramsey et al.	219/244
3,344,789	10/1967	Arnold et al.	128/287
3,403,681	10/1968	Hoey et al.	128/290
3,542,634	11/1970	Such et al.	161/88
3,675,654	7/1972	Baker et al.	128/287
3,843,478	10/1974	Zuscik	161/164
3,929,135	12/1975	Thompson	128/287
3,939,836	2/1976	Tunc	604/370
3,949,127	4/1976	Ostermeier et al.	428/137
3,965,906	6/1976	Karami	128/287
3,967,623	7/1976	Butterworth et al.	128/287
4,079,739	3/1978	Whitehead	128/290 R
4,100,324	7/1978	Anderson et al.	428/288
4,128,679	12/1978	Pohland	428/131
4,135,021	1/1979	Patchell et al.	428/134
4,151,240	4/1979	Lucas et al.	264/504
4,184,498	1/1980	Franco	128/290 R
4,192,311	3/1980	Felfoldi	128/287

**FOREIGN PATENT DOCUMENTS**

0164740	12/1985	European Pat. Off.	
0165807	12/1985	European Pat. Off.	
2204855	8/1973	Fed. Rep. of Germany	
1534042	6/1967	France	
1132120	10/1968	United Kingdom	
1229121	4/1971	United Kingdom	
1287063	8/1972	United Kingdom	
1296024	11/1972	United Kingdom	
1308677	2/1973	United Kingdom	
1393426	5/1975	United Kingdom	
1408009	10/1975	United Kingdom	
2103933A	3/1983	United Kingdom	
2175026A	11/1986	United Kingdom	

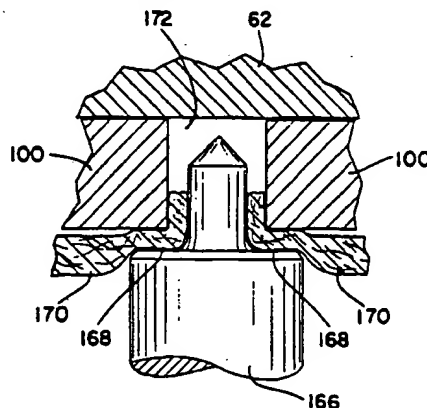
Primary Examiner—Randy C. Shay

Attorney, Agent, or Firm—Thomas J. Connelly

[57]

**ABSTRACT**

A sanitary napkin is disclosed which has an absorbent and a fluid-permeable cover positioned over at least one surface of the absorbent. The cover is formed from a nonwoven web having a network of essentially unbroken thermoplastic fibers. The web has a plurality of apertures formed therethrough which are located in a predetermined area which represents less than about 80% of the surface area of the cover. Each of the apertures is surrounded by a consolidated ring formed of thermally set thermoplastic fibers which in turn is surrounded by a raised area which contacts the body of the user. The apertures formed in the web occupy about 20% to 55% of the predetermined area and permit body fluid to quickly pass through to the absorbent.

**14 Claims, 8 Drawing Sheets**

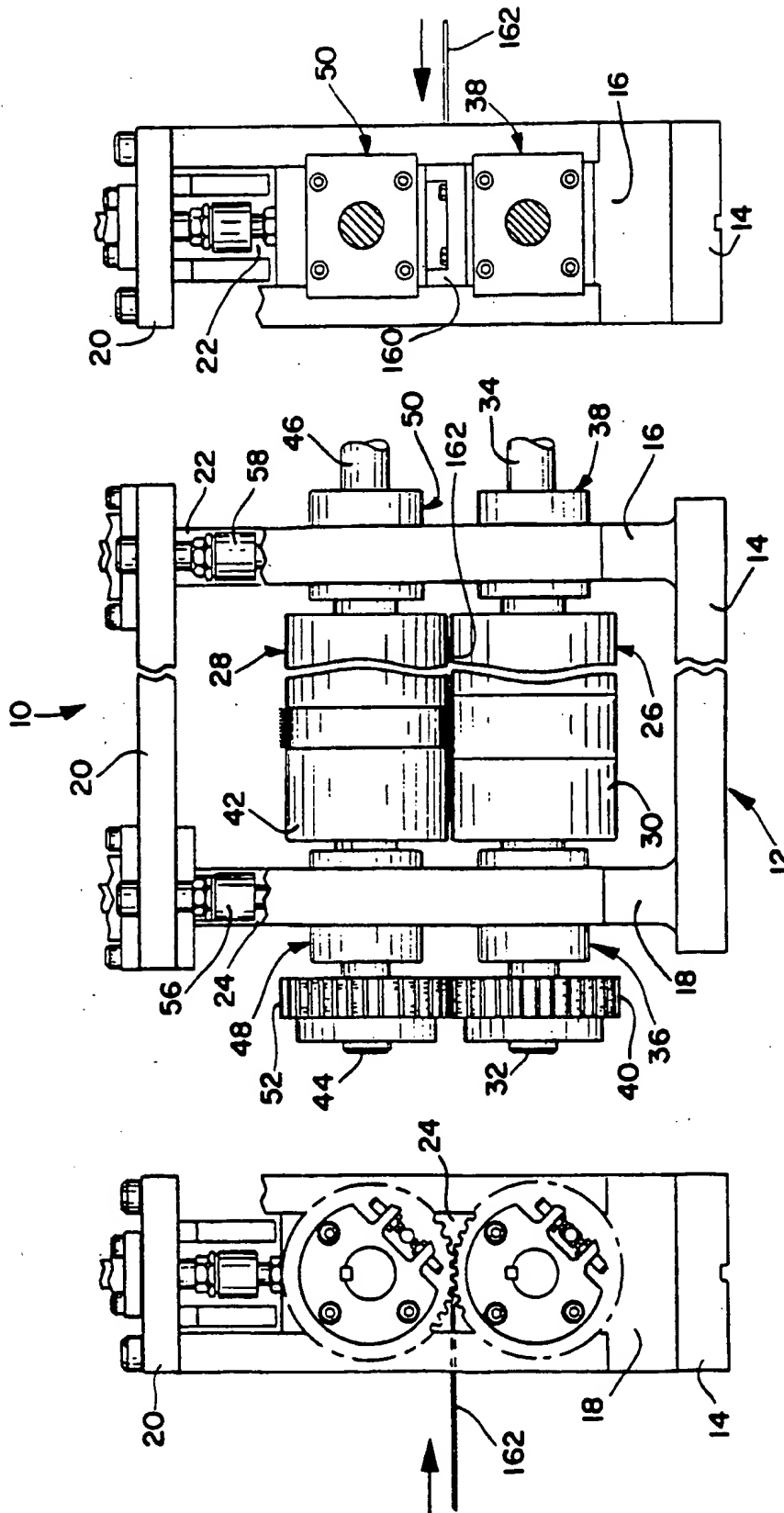


FIG. 2

FIG. 1

FIG. 3

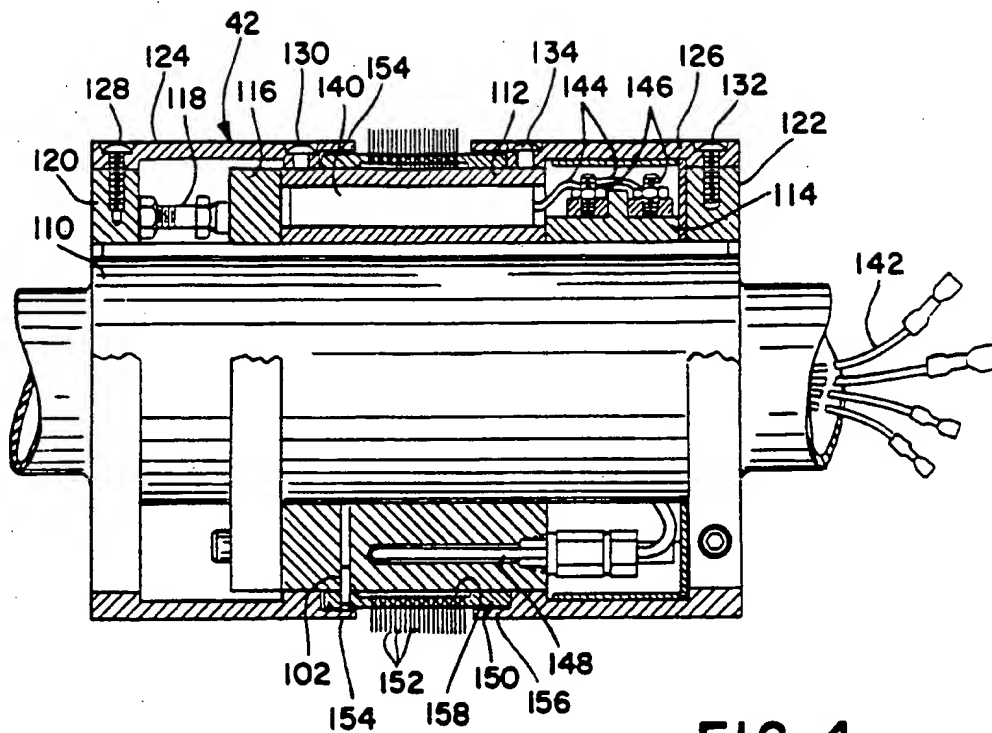


FIG. 4

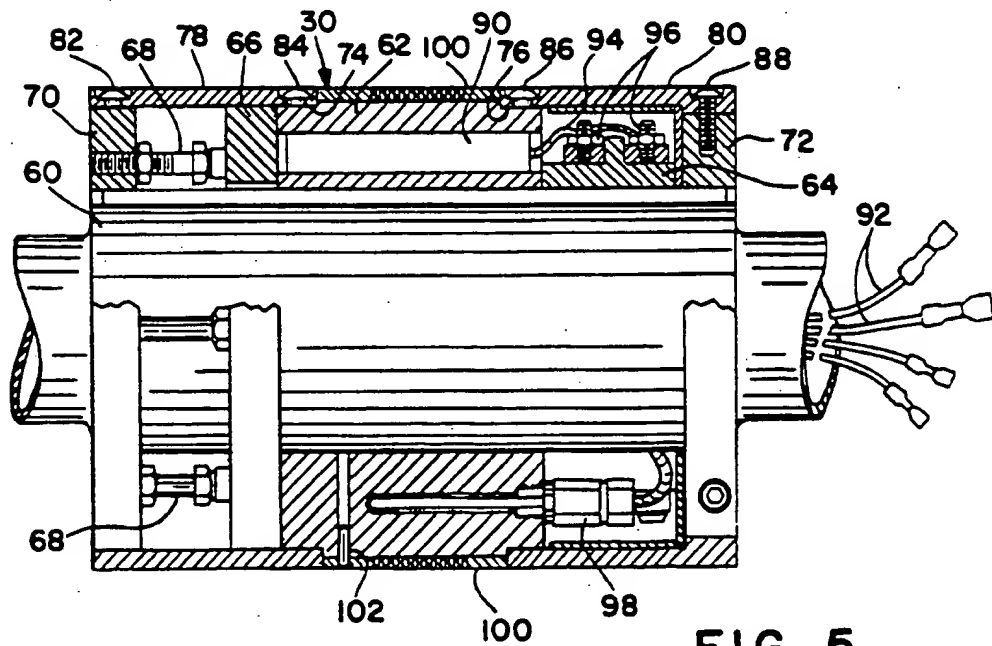


FIG. 5

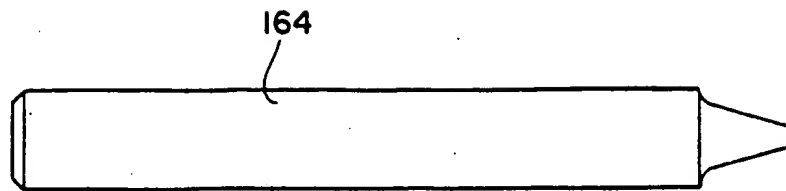


FIG. 6

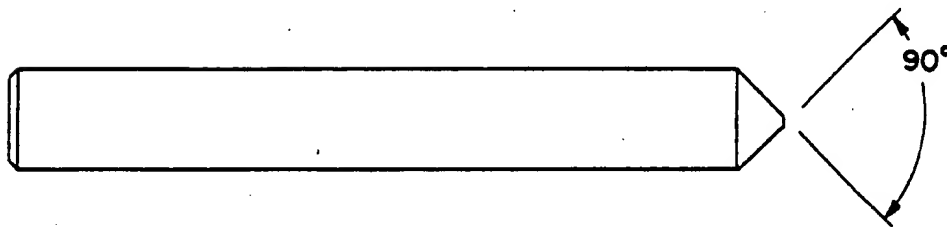


FIG. 7



FIG. 8

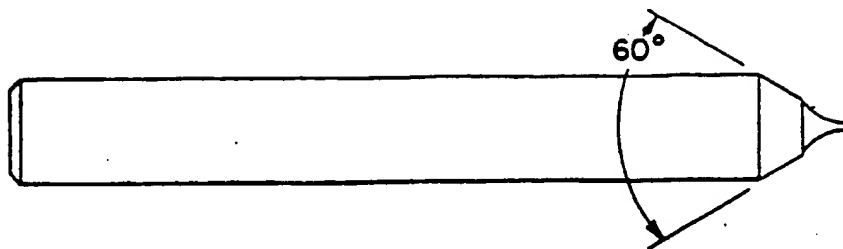


FIG. 9

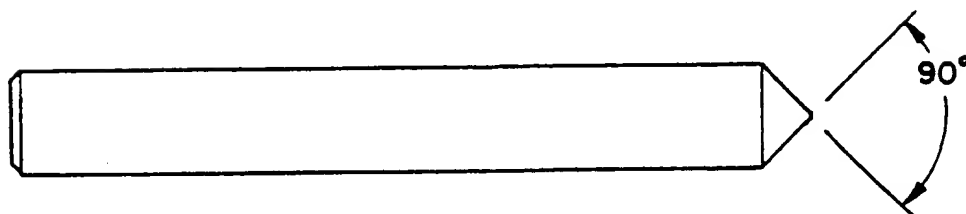


FIG. 10

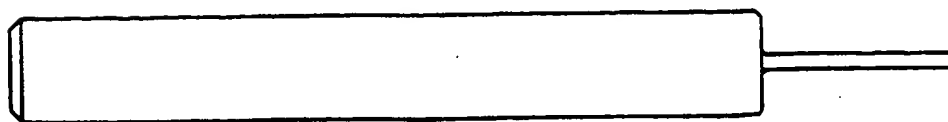


FIG. 11

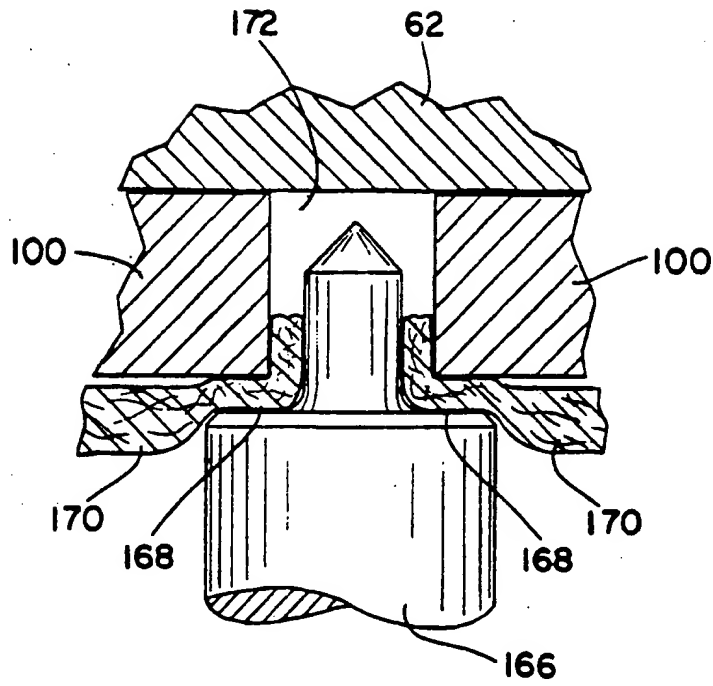


FIG. 12

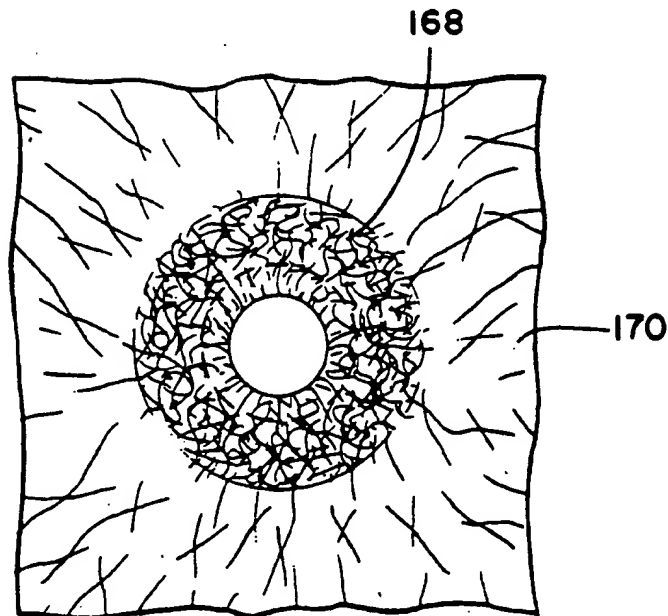


FIG. 13

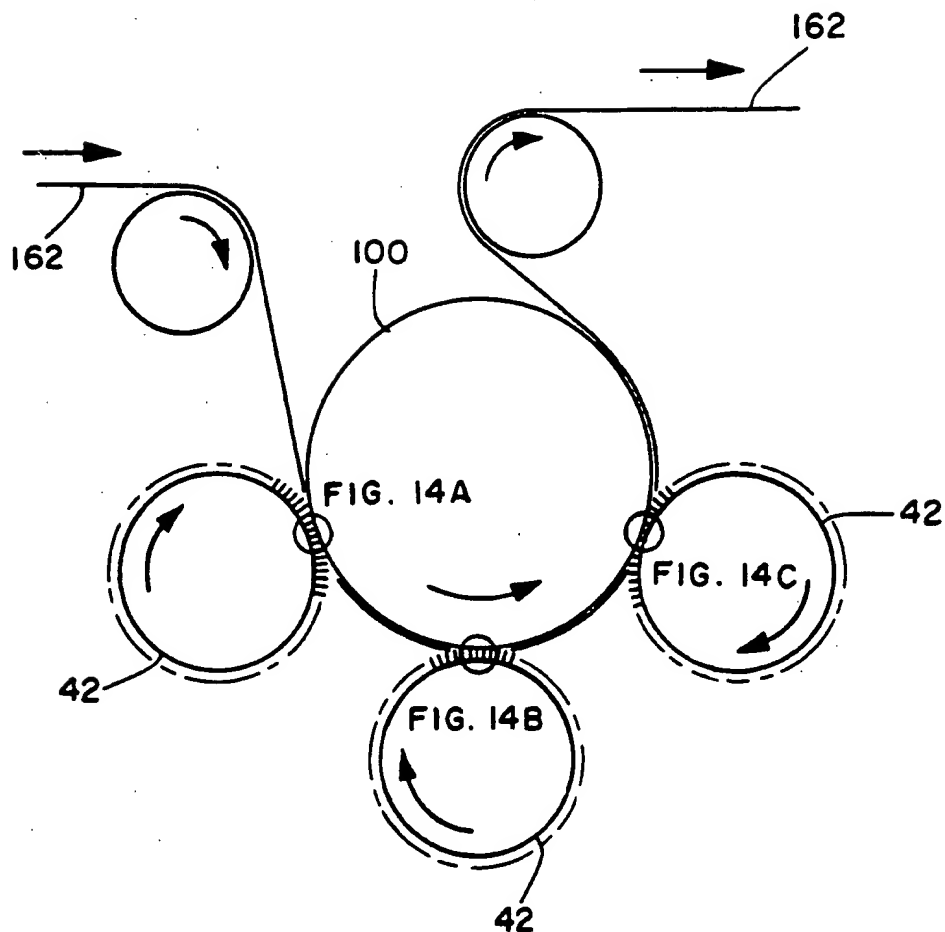


FIG. 14

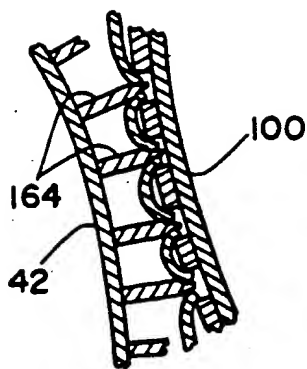


FIG. 14A

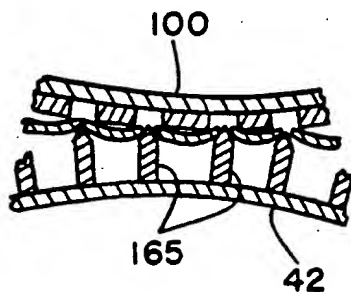


FIG. 14B

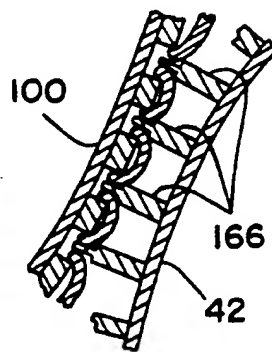


FIG. 14C

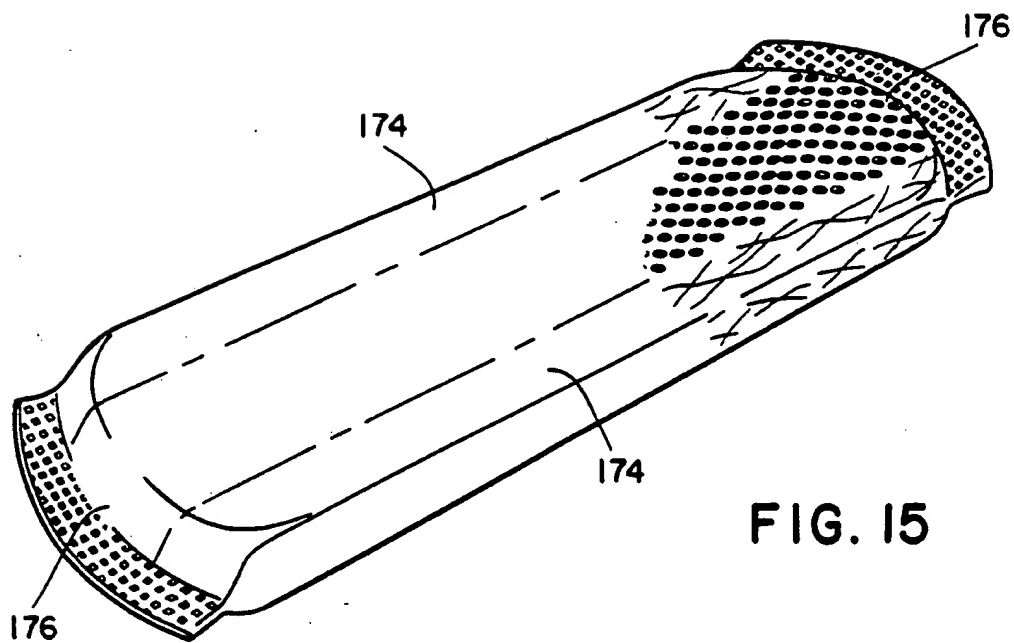


FIG. 15

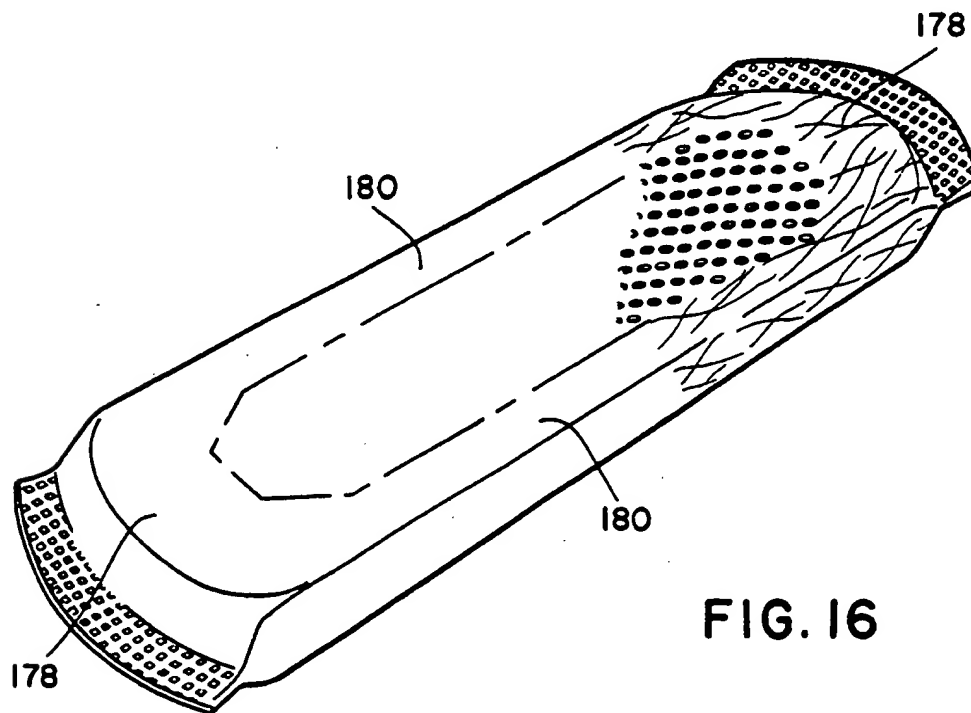


FIG. 16

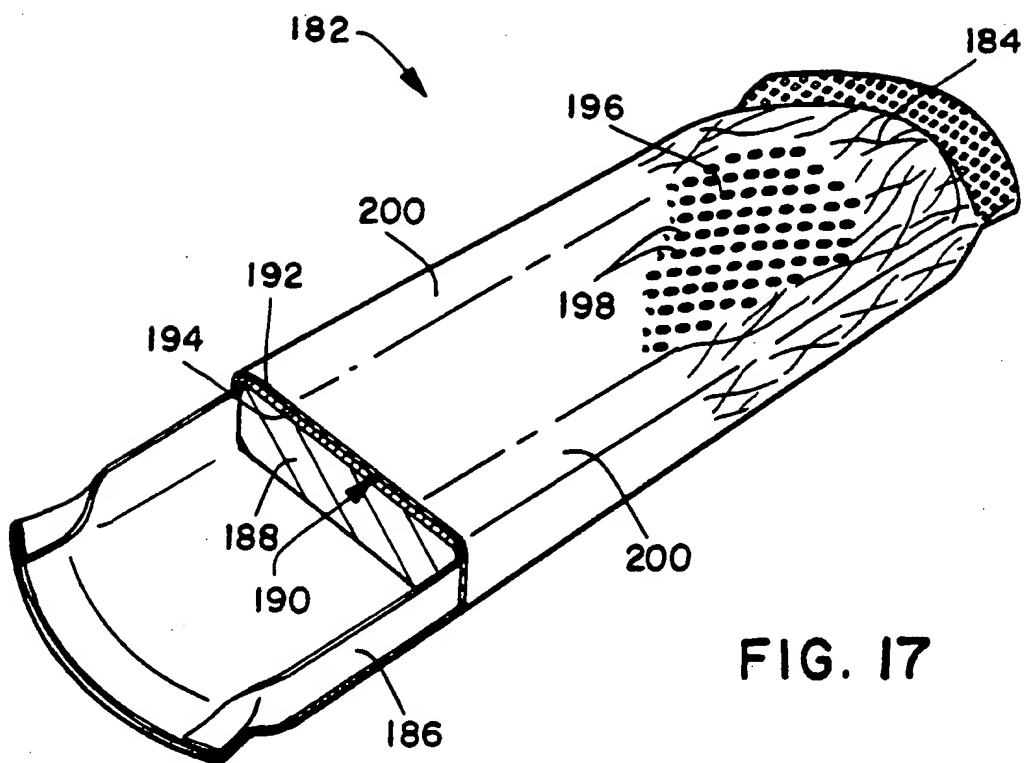


FIG. 17

## SANITARY NAPKIN HAVING A COVER FORMED FROM A NONWOVEN WEB

This application is a continuation-in-part of U.S. Ser. No. 07/061,844, filed Jun. 11, 1987 which in turn is a continuation of U.S. Ser. No. 06/774,252, filed Sep. 9, 1985 now abandoned.

### FIELD OF THE INVENTION

This invention relates to a sanitary napkin having a cover made from a nonwoven web, and more particularly to a web having a predetermined area which is apertured so as to create openings which occupy about 20% to 55% of the predetermined area.

### BACKGROUND OF THE INVENTION

Feminine pads, also referred to as sanitary napkins, such as those described in U.S. Pat. Nos. 4,397,644 and 4,079,739, are well known. Sanitary napkins of the prior art are normally of multilayered construction including: a fluid-absorbent core interposed within a fluid-impermeable baffle and a fluid-permeable cover. The cover being designed to transmit menstrual fluid or the like across its boundary to the absorbent core. As those skilled in the art will readily appreciate, the interrelationship of components is substantially more intricate; however, for purposes of basic understanding, the foregoing suffices. Within those very general parameters, one may also profitably compare the contoured sanitary napkin disclosed in U.S. Pat. No. 4,184,498.

Conventional sanitary napkins typically comprise an absorbing layer made of a hydrophilic absorbent material such as absorbent paper, absorbent cotton, pulverized pulp or the like, so that when having absorbed therein a large quantity of body fluid, the napkin becomes sticky on its surface. In addition, when the absorbing layer is subjected to pressure, the body fluid once absorbed therein is likely to ooze or flow out in a reverse direction toward the body of the wearer and can cause a sticky surface. Thus, the uppermost layer of the sanitary napkin becomes very uncomfortable to use and unsanitary. This problem is particularly apparent when body fluid is discharged in large quantities within a relatively short period of time in the initial stage of menstruation. Sometimes the absorbing layer is unable to fully absorb the discharge thereby permitting the body fluid to remain on the surface of the absorbing layer and allowing sideways leakage when the layer is subjected to varying body pressures.

Even at times of light flow, however, body fluids do not necessarily readily pass through the fluid-permeable cover into the fluid-absorbent core of the sanitary napkin. It has been recognized that menses is a complex fluid with uterine blood being only one component of its composition. Menses also contains cellular debris and a mucus-like fraction. The composition of menses has a significant effect on the transport of fluid from the cover into the absorbent matrix of a sanitary napkin, especially for certain women who consistently have high viscosity menses and comparatively low flow volumes. High viscosity menses tends to stay on the upper surface of the cover of the sanitary napkin.

The cover, or top layer of a sanitary napkin, is an important structural component respecting overall product efficacy, both objectively and subjectively from the user's point of view. A number of dichotomies become apparent when describing the ideal or preferred

top layer of sanitary napkins. For consumer acceptance, a cloth-like texture and feel are preferred. In addition, the top layer should appear clean, dry and stain-free even during use. Thus, the cover layer should remain aesthetically pleasing even during use. Nonwoven webs which most economically and effectively achieve the objective of an acceptable cloth-like texture are, however, generally undesirable when evaluated on their ability to remain clean, dry and stain-free during use. With nonwoven webs, menses tends to get hung up or remain on the top layer while never reaching the lower absorbent layer since the fibers often act to block the path to the absorbent layer. Thus, the sanitary napkin becomes uncomfortable, wet, sticky and generally non-aesthetic.

### SUMMARY OF THE INVENTION

Briefly, this invention relates to a sanitary napkin which has an absorbent and a fluid-permeable cover positioned over at least one surface of the absorbent. The cover is formed from a nonwoven web having a network of essentially unbroken thermoplastic fibers. The web has a plurality of apertures formed there-through which are located in a predetermined area which represents less than about 80% of the total surface area of the cover. Each of the apertures is surrounded by a consolidated ring formed of thermally set thermoplastic fibers which in turn is surrounded by a raised area which contacts the body of the user. The apertures formed in the web occupy about 20% to 55% of the predetermined area and permit body fluid to quickly pass through to the absorbent.

The general object of this invention is to provide a sanitary napkin having a cover formed from a nonwoven web. A more specific object of this invention is to provide a sanitary napkin with a cover formed from a nonwoven web containing a predetermined area which is apertured.

Another object of this invention is to provide a sanitary napkin having a cover made from a nonwoven web wherein a predetermined area of the web is apertured and the apertures occupy about 20% to 55% of the predetermined area.

Still, another object of this invention is to provide a sanitary napkin having a cover which is formed from a nonwoven web which contains at least two layers.

Still further, an object of this invention is to provide a sanitary napkin with an improved cover.

Other objects and advantages of the present invention will become apparent to those skilled in the art in view of the following description and the accompanying drawings.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a cross-sectional view through the length of the rotary perforating apparatus of the present invention.

FIG. 2 is a partial cross-sectional view through the drive side of the apparatus shown in FIG. 1.

FIG. 3 is a partial cross-sectional view through the operator side of the apparatus shown in FIG. 1.

FIG. 4 is a cross-sectional view through the pin roll of the apparatus shown in FIG. 1.

FIG. 5 is a cross-sectional view through the hole roll of the apparatus shown in FIG. 1.

FIGS. 6 through 11 are views of various types of pins which are useful in the practice of the present invention.

FIG. 12 is a cross-sectional view of a shouldered pin shown to be perforating an area of nonwoven web comprising thermoplastic fibers.

FIG. 13 is a view from the bottom of the nonwoven web of FIG. 12 after the pin has been removed.

FIG. 14 is a cross-sectional view through the hole roll and each of the pin rolls is a multi-roll system showing the path of the nonwoven web.

FIG. 14A is an enlarged view of a portion of FIG. 14 showing pins having a profile as depicted in FIG. 6 piercing the nonwoven web and entering into the apertures formed in the roll 100.

FIG. 14B is an enlarged view of a portion of FIG. 14 showing pins having a profile as depicted in FIG. 10 piercing the nonwoven web and entering into the apertures formed in the roll 100.

FIG. 14C is an enlarged view of a portion of FIG. 14 showing pins having a profile as depicted in FIG. 11 piercing the nonwoven web and entering into the apertures formed in the roll 100.

FIG. 15 is a plan view of the top or cover layer of a feminine sanitary napkin depicting the pattern of the perforations.

FIG. 16 is a plan view of the top or cover layer of another feminine sanitary napkin depicting the pattern of the perforations.

FIG. 17 is a partial cross-sectional view of a sanitary napkin showing an absorbent enclosed by a fluid-permeable cover and a fluid-impermeable baffle.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Any type of nonwoven web comprising fusible polymeric fibers or filaments is useful in the practice of the present invention. For instance, a suitable nonwoven web cover material is a uniform spunbonded nonwoven web having one and one-half denier or larger fibers or filaments. Such a material is described in U.S. Pat. No. 4,340,563, to which reference is made for a fuller description of such material. This material is also referred to as linear drawn spunbond (LDS).

Alternatively, a bonded carded web is useful in the practice of the present invention. The bonded carded web is generally composed of 100% polypropylene, however, blends containing rayon, polyester and the like are equally suitable. Hollow fiber types may also be present in the bonded carded web. The bonded carded web is generally in the range of about 10 to about 50 grams per square meter (gsm) and is preferably within the range of about 18 to 24 gsm. The bonded carded web fibers range from about one and one-half to about three denier. The staple length is within the range of about 1.5 to 2 inches. Alternatively, the bonded carded web may be laminated to a film of ethyl methacrylate.

Another suitable nonwoven web is a "coform" material as described in U.S. Pat. No. 4,100,324. Coform is a blend of meltblown microfibers and an absorbent fiber such as pulp fluff. Representative meltblown fibers include polypropylene, polyethylene, polyethylene terephthalate, polyamide, acrylic and nylon fibers or blends. Alternatively, the coform may be laminated to a spunbonded nonwoven web.

A sanitary napkin cover, such as that described in U.S. Pat. No. 4,397,644, is also useful in the practice of the present invention. The material described therein is primarily a nonwoven thermoplastic web which is of sufficiently open structure to enhance the transfer of menses into an absorbent layer. Bonding is used to ac-

complish integration. This may be achieved by the application of heat, such as hot calendar embossing, or by ultrasonic means. Alternatively, the bonding may be accomplished by mechanical manipulation of the fibers without heat, as in needling. Ultrasonic bonding is particularly preferred. This nonwoven web is typically comprised of a polyester and polypropylene combination, typically 30% and 70% respectively. Alternatively, it may be comprised of 100% polypropylene. Hollow fiber types may also be present. This nonwoven web is a carded web which is generally in the range of about 30 to 150 gsm. Preferably, this nonwoven web ranges from about 40 to 120 gsm. This material ranges from about one and one-half to about eight denier and may be of high crimp nature thus giving it greater loft. Preferably, it is within the range of about 3 to 8 denier. The staple length is also within the range of about one and one-half to about three inches. This material may alternatively be laminated to spunbonded web.

In particular, suitable fusible fibers for this invention are; Vinyon, a vinyl chloride/vinyl acetate copolymer sold by Celanese Fiber Division and formerly by Avtex Fibers, Inc., of New York, N.Y.; Eastman 410 amorphous or crystalline polyester fibers sold by Eastman Chemical Products, Inc., a Subsidiary of Eastman Kodak Co., Kingsport, Tenn.; or Chisso ES a bicomponent polypropylene/polyethylene fiber sold by Chisso Ltd., Osaka, Japan which, due to its differential melting point for each component of the fiber, could be used as the only thermoplastic fiber as well as in blends with other fibers.

A cylinder which would simply punch holes through and displace fiber is easily achieved. However, the nonwoven web material typically has a memory and thus a strong tendency to return to its original position and thereby close the hole which was just formed. It has been found that heating the tips of the pin to heat the nonwoven web during penetration acts to heat the fusible polymeric filaments near the area of the pin hole. The polymeric filaments are heated to a temperature just below the point of melting and cooled to room temperature after the pin is removed. This produced the consolidated area 168 seen in FIGS. 12 and 13. The consolidated rings 168 preferably have a diameter at least twice the diameter of the apertures formed in the web 162. The fusible thermoplastic fibers used in the nonwoven web are meltable and, if sufficient heat and pressure are applied to this nonwoven material, select areas will consolidate or tend to melt and lose the fibrous network characteristics of nonwoven materials. Under magnification of 20X, the material appears glassine, almost glass-like in appearance. The consolidated rings and apertures create a region which is more hydrophilic than the non-perforated surface of the web and therefore attracts fluid into these perforations. Of course, it is possible that some areas will actually melt and fuse during the course of the subject operation, but this is deemed to be less desirable in the practice of the present invention.

It is also relevant to note that it is not desirable to simply make a hole that removes or evaporates the material previously in the hole or aperture area and thus leaving a solid clean hole in the fabric. The goal of the present invention is to allow all of the material or nonwoven fabric to remain in the web because it is desirable to create some type of depth to the point of penetration. This depth or three dimensional profile is desirable

since it allows a perception of thickness or texture to the nonwoven fabric.

Ideally, by making the apertures in the nonwoven web in the manner taught by the present invention, the raised ridges 170 are formed around the periphery of the dense consolidated portions 168, see FIGS. 12 and 13. The nonwoven material which has not become consolidated or densified is fluffier and thicker and therefore appears like a ridge or raised area 170 adjacent the consolidated ring 168. This ridged area 170 is ideally considerably less acceptable to fluid or menses since the menses can readily get hung up or stuck on the upper surface of the ridged portion 170 and be unable to enter the absorbent below. Generally, the heavier the fabric, the higher the ridge 170 will be. Since the consolidated rings 168 and apertures present a more hydrophilic area, the menses will be attracted to these areas and will readily pass through the apertures directly into the absorbent below.

Preferably, the heated pin makes a distinct, true hole through the nonwoven fabric. That is, no fibers remain in the hole itself. The hole should be free from any extraneous fibers or impurities. If a glob of fluid enters an aperture blocked by a few fibers, the glob of fluid could get hung up on the top of the nonwoven web and remain in that position blocking the entrance to the hole. This is obviously undesirable since it leaves an undesirable stain and wetness on the surface of the nonwoven cover.

The side walls of the apertures formed in the nonwoven web are aligned at an angle of approximately 90 degrees to the top horizontal plane of the web.

The apparatus of the present invention may be envisioned as any type of perforating device having a first member containing a series of pins and a second member containing a series of indentions or apertures for receiving entry of the pins. Preferably, the apparatus is a rotary perforating system with the capability of generating a combination of holes having a variety of shapes and in a wide range of patterns with a single pass of the nonwoven web through the system. The perforating system can be described as a system comprising two or more cylinders mounted in a configuration such that one or more cylinders are associated with the peripheral surface of a single apertured cylinder.

The apertured cylinder can be described as a hole roll which has been machined or engraved for finished female pattern design. The hole roll is heated internally and the surface is hardened to withstand embossing pressure.

A pin roll is also machined to a finished male pattern design for perforating the web. This matches the hole roll and is equipped with tools; for example, perforating pins, embossing pins or a combination of both. The pin roll is also heated internally.

Referring to FIGS. 1-3, a perforating apparatus 10 is shown having a frame 12 which includes a horizontal base 14, a pair of vertical side walls 16 and 18, and a top member 20 extending across the upper end of the side walls. The side walls 16 and 18 include vertical slots 22 and 24, respectively. Mounted within the slots are a pair of roll assemblies 26 and 28. The lower assembly 26 includes a hollow roll 30 and a pair of support shafts 32 and 34 extending coaxially from opposite ends of the lower roll 30. The shaft 32 is retained in a bearing mechanism 36 mounted in the slot 24 of the side wall 18. The shaft 32 projects completely through the slot 24 and is operably connected to a toothed gear 40. The other

shaft 34 extends completely through the slot 22 and is retained in bearing housing 38. The shaft 34 is of a hollow construction for the purpose of receiving electrical conduits as will be hereinafter explained.

The upper roll assembly 28 includes a pin roll 42 and a pair of support shafts 44 and 46 extending longitudinally coaxially from opposite ends thereof. The shaft 44 is retained in a bearing mechanism 48 which is mounted in the slot 24, and the shaft 46 is retained in a bearing mechanism 50 which is mounted in the slot 22.

The shaft 44 projects completely through the slot 24 and is operably connected to a toothed gear 52 which engages the gear 40. There is a zero backlash arrangement. The shaft 44 may be driven by a power source (not shown) through a controllable speed device. The other shaft 46 extends completely through the slot 22 and is hollow in order to receive electrical conduits as will be hereinafter explained.

Referring to FIG. 3, a spacer 160 is shown which is used to adjust the clearance between the rolls 30 and 42. The spacer 160 determines the amount of penetration obtained by the pins into the hole roll 30.

Referring again to FIG. 1, the bearing mechanisms 48 and 50 are each vertically adjustable within the respective slots 24 and 22 by turnbuckle type connectors 56 and 58. The connectors 56 and 58 enable the upper or pin roll 42 to be raised or lowered relative to the hole roll 30 in order to change the vertical depth of the nip defined between the rolls 30 and 42, and also for maintenance and replacement of parts.

Referring to FIG. 5, the lower roll 30 contains an arbor 60 upon which a sleeve 62 is mounted by a keyway (not shown). The sleeve 62 is formed of a heat conducting material, typically brass, steel or aluminum. The preferred material is aluminum. The sleeve 62 is axially sandwiched between a terminal ring 64 and a retaining ring 66. The retaining ring 66 is pushed against the sleeve 62 by turnbuckle type connectors 68 which extend between the retaining ring 66 and an end ring 70. The end ring 70, in turn, is mounted on the arbor 60. The terminal ring 64 is positioned axially between the sleeve 62 and a second end ring 72 which is also mounted on the arbor 60.

The outer periphery of the sleeve 62 is stepped at its ends to define a pair of annular shoulders 74 and 76 which receive the inner ends of a pair of cover rings 78 and 80. A cover ring 78 engages the shoulder 74 and the outer peripheries of both the end ring 70 and the retaining ring 66. The cover ring 78 is suitably fastened to the end ring 70 and to the sleeve 62 by fasteners 82 and 84. A second cover ring 80 engages the shoulder 76 and the outer periphery of the end ring 72 and is suitably fastened thereto by fasteners 86 and 88.

The sleeve 62 contains a cartridge heater 90 which is electrically connected to an external power source (not shown) via electrical conduits 92 and 94 which are interconnected to terminals 96 carried by the terminal ring 64. The cartridge heater 90 provides heat to the sleeve 62. The sleeve 62 also carries a conventional temperature probe 98 for monitoring the temperature of the sleeve 62.

Mounted on the outside periphery of the sleeve 62 is a cylindrical strip 100. The strip 100 is formed of a heat conducting material such as brass, steel or aluminum. The preferred material is aluminum. The strip 100 is mounted on the sleeve 62 by a press fit, and a roll pin 102 is inserted through both the strip 100 and the sleeve 62 to prevent relative circumferential movement there-

between. Axial movement of the strip 100 is prevented by the cover sleeves 78 and 80 which bear against the axial ends of the strip 100. The strip 100 contains a series of tiny apertures or sockets 101 arranged in a pre-set pattern for reasons to be explained hereinafter. Preferably, each aperture 101 is round or circular in configuration and is sized to receive a corresponding pin 152 mounted on the upper roll 42.

Referring to FIG. 4, the upper roll 42 contains an arbor 110 upon which a sleeve 112 is mounted in the same manner as the sleeve 62 is mounted on the lower roll 30. The sleeve 112 is formed of a heat conducting material, such as brass, steel or aluminum, and is axially sandwiched between a terminal ring 114 and a retaining ring 116. The retaining ring 116 is pushed against the sleeve 112 by turnbuckle type connectors 118 which extend between the retaining ring 116 and an end ring 120 which is mounted on the arbor 110. The terminal ring 114 is positioned axially between the sleeve 112 and another end ring 122 mounted on the arbor 110.

Extending around opposite ends of the arbor 110 are a pair of cover sleeves 124 and 126. The cover sleeve 124 is secured to the outer peripheries of both the end ring 120 and the sleeve 112 by fasteners 128 and 130. The cover sleeve 126 is secured to the outer peripheries of both the end ring 122 and the sleeve 112 by fasteners 132 and 134.

The sleeve 112 contains a cartridge heater 140 which is electrically connected to an external power source (not shown) via electrical conduits 142 and 144. The conduits 142 and 144 are interconnected to terminals 146 carried by the terminal ring 114. The cartridge heater 140 provides heat to the sleeve 112. The sleeve 112 also carries a conventional temperature probe 148 for monitoring the temperature of the sleeve 112.

Mounted on the outside periphery of the sleeve 112 is a cylindrical strip 150 formed of a heat conducting material such as brass, steel or aluminum. The preferred material is aluminum. The strip 150 is mounted on the sleeve 112 by a press fit, and a roll pin 102 is inserted through both the strip 150 and the sleeve 112 to prevent relative circumferential movement therebetween. Lip portions 154 and 156 of the cover sleeves 124 and 126 overlie the edges of the strip 150 to aid in the retention thereof.

The strip 150 carries a plurality of needles or pins 152 which project outwardly beyond the outer peripheries of the cover sleeves 124 and 126 by a distance greater than the depth of the nip between the rolls 30 and 42 so that the ends of the pins 152 enter the apertures 101 formed in the lower roll 30. To that end, the apertures 101 are arranged in register with the pins 152 and have a wider diameter than the pins 152 to prevent the pins 152 from contacting the walls of the apertures 101. It will be appreciated from the foregoing that the upper roll 42 may be designated as a pin roll and the lower roll 30 as a hole roll. Preferably, the pins 152 are formed of a heat conductive material such as brass or steel. The pins 152 are mounted within the strip 150 by placement either from the inside of or from the outside of the cylinder. Placement of the pins 152 on the outside of the cylinder generally requires a space for setting of the pins 152 and the use of a type of compound that, upon filling the space, provides an element of permanence to the setting, thereby not allowing the pins 152 to be removed. The strip 150 includes a recess 158 facing the sleeve 112 to receive the inner ends of the pins 152. The pins 152 project in radial outward directions with re-

spect to the axis of rotation of the pin roll 42. The apertures 101 formed in the strip 100 project in corresponding directions so as to be able to receive the ends of the pins 152.

It will be appreciated that the pins 152 are heated by conduction due to contact between the heated sleeve 112 and the strip 150 and between the strip 150 and the inner ends of the pins 152. The corresponding hole roll 30 is heated in a similar manner. In operation, the rolls 30 and 42 are synchronously rotated while a web 162 of fabric is fed through the nip defined by the rolls. As this occurs, the pins 152 contact and completely penetrate the fabric, separating the individual fibers to form a generally cylindrical hole through the fabric. Since the pins 152 are heated, the fibers which are displaced by each heated pin will be consolidated, compressed or otherwise densified and set in that glassine-like configuration so that the hole cannot re-close. Thus, the fibrous web is autogenously bonded; that is, does not require the use of an adhesive to form structurally stable apertures. Some portion of the fibers being pushed will enter the associated opening in the hole roll 30, whereby dense consolidated rings 168 and annular ridge 170 will be formed around each of the holes. Such consolidated rings 168 and raised ridges 170 serve to add depth to the web and thereby improve the cloth-like texture and feel.

Since the pins 152 pass completely through the fabric and tend to thermally set any fibers with which they come into contact, it is assured that all of the holes will be unblocked. In other words, no fiber strands will remain which might extend across, and partially obstruct, the holes.

Nonwoven web fabric 162 may enter the apparatus 10 from either side of the two cylinders.

The foregoing describes a two cylinder configuration with a female patterned main cylinder and a male patterned worker cylinder. However, other embodiments are anticipated such as a three cylinder configuration where the three cylinders may or may not relate in a linear fashion. By using a multiple cylinder configuration a wider variety of patterns can be attained since different male or pin rolls 42 may be used. That is, the pin rolls 42 need not be of the same shape or diameter. This is best depicted in FIGS. 14, 14A, 14B and 14C wherein there are three different pin rolls 42.

At the outset, it is relevant to note that the temperature of the heated pin roll 42 may be higher than that of the hole roll 30 without departing from the spirit of the present invention. This is because approximately 10% of the heat from the pin roll 42 may be lost at the tips of the pins 152 but without a loss in overall operating or functional efficiency. Of course, the two rolls 30 and 42 may be maintained at about the same temperature. There is no easy means of actually heating the tips of the pins 152, thus, it is necessary to heat the pin roll 42 itself and via conduction drive heat to the pin head. The temperature of the pin roll 42 may generally be maintained in the range of about 110 degrees Fahrenheit to about 300 degrees Fahrenheit. The hole roll 30, on the other hand, may generally fall within the temperature range of about 90 degrees Fahrenheit to about 350 degrees Fahrenheit.

The speed of the rotary apparatus is generally within the range of about 12 feet to 220 feet per minute on nonwoven fiber. Since we are dealing with a rotary process, if parameters such as heat, angle of approach of the pin, and the like are controlled, speeds up to approx-

imately 500 feet per minute could conceivably be achieved.

It may be considered suitable to thermally treat the nonwoven web 162 prior to processing. The web 162 may be pre-cooled or post-cooled, that is, cooled after undergoing the perforation operation.

Generally, if the speed of a nonwoven web 162 through the rotary apparatus is increased, the temperature must also be increased. These two parameters are directly related since the web 162 may actually burn if the temperature is too high and the pins 152 and the web 162 maintain contact for too long. Preferably, an electrical mechanism is used which is able to maintain both parameters of temperature and speed in the ideal or best relationship.

It is also particularly relevant to note that during the rotary operation, the pins 152 never touch the interior of the corresponding hole on the hole roll 30. The individual hole diameters in the hole roll 30 are preferably always approximately 0.010 inch larger than the diameter of the pin shaft. This is area 172 in FIG. 12. At a minimum, the hole diameter is selected to be non-binding respecting the size of the mating pin, typically at least 0.005 inch greater than the diameter of the pin shaft on the pin roll. This spacing is important in the practice of the present invention in order to achieve the proper depth of the entry of the pin through the nonwoven web fabric. Otherwise, if the pin head was too long, it might touch the sides of the hole.

FIGS. 6-11 depict pins of varying sizes and shapes. Each of these pins is suitable for forming the apertures in the nonwoven web 162. Each pin may be located on a flat plate type device placed on some type of rotary cylinder as was previously described. The hole in the hole roll 30 need not be of the same shape as the pin or pin head. As long as the proper relative dimensions are maintained to preclude binding or interference, the hole may be less defined or more rounded than the pin shape.

FIGS. 11, 12 and 14C depict a shouldered pin 166 which is a suitable pin in the practice of the present invention.

The exact shape and dimensions of the pin head are not critical for present purposes. However, the diameter of the shaft 164 of the pin is important. The shaft 164 of the pin is most relevant since it determines the diameter of the aperture which is formed. Generally, the diameter of the shaft of the pin ranges from about 0.015 to about 0.125 of an inch. Preferably, the pin shaft ranges from about 0.032 to about 0.097 of an inch. The pins essentially act to burst the nonwoven fabric while not actually damaging or breaking any of the fibers themselves.

The pin itself is comprised of a metal. Preferred metals include steel or brass, with steel being most preferred. Almost any type of steel can be used including hard or soft steel. Stainless steel is very suitable. The preferred metal is one which would allow the greatest heat transfer from the heated roll to the pin head.

A plastic pin or pin head may be desired in the practice of the present invention at the option of the designer. However, some plastics are generally not able to withstand the high operating temperatures as described herein and materials selection needs to be made accordingly.

Alternatively, the pin may comprise a metal core such as steel with a plastic surface. The plastic covering may be a coating or it may be a mechanically fit by pushing a covering onto the pin. The plastic coated

metal pin concept is particularly advantageous since the plastic surface provides a smooth, slippery surface to the pin, thus allowing it to penetrate the nonwoven fabric more readily. A preferred coating material would be a fluoropolymer coating, in particular, polytetrafluoroethylene (Teflon® by DuPont).

A metal pin may also be impregnated with plastic material. In this case, the metal surface must be porous enough to allow the actual impregnation of the plastic onto the metal. Suitable plastic materials for this impregnation include, but are not limited to, polypropylene, polyethylene and the like.

Every one of the pins must enter the matching hole on the hole roll 30 with perfect clearance. There is never any metal-to-metal, or in the case of plastic coated pins, plastic-to-plastic contact. The diameter of the shaft of the pin is generally in the range of 0.015 inch to about 0.125 inch. This is the true diameter of the tool, therefore, this value does not necessarily represent the diameter of the finished hole. The finished hole may be slightly oblong and slightly larger than the diameter of the pin shaft when completed. The exact diameter of the hole is dependent on a variety of factors that must be each independently determined.

In determining the number of apertures or holes per area on the nonwoven web 162, it is pertinent to discuss the percent of openness of a predetermined apertured area. This is a more meaningful value than the pin population per square inch since pin diameter varies so widely. The goal is to form a texture on the surface which has opening therein to allow fluid menses to penetrate more readily while at the same time minimizing a return of the fluid to the nonwoven cover. Maintaining a sanitary napkin which is aesthetically pleasing is thus a key to the present invention.

The cover is formed from a nonwoven web having a network of essentially unbroken thermoplastic fibers. The web has a plurality of apertures formed through which are located in a predetermined area. The predetermined area represents less than about 80%, and preferably less than about 60%, of the surface area of the cover. The surface area of the cover can be defined as the available area of the cover which is designed to face the body of the wearer. Each of the apertures is surrounded by a consolidated ring formed of thermally set thermoplastic fibers. Each consolidated ring in turn is surrounded by raised areas which can contact the body of the wearer. The apertures occupy about 20% to 55% of the available surface area within the predetermined area. Preferably, the apertures occupy about 30% to 50%, more preferably about 40% to 50% of the surface area within the predetermined area. The upper practical limit seems to be approximately 55% due to mechanical and/or physical limitations of the system.

The pattern of the pins themselves may vary considerably. If a smaller shaft size is selected, a greater number of holes are necessary to achieve the same degree of openness.

It may also be advantageous to add a binder to the intact area of the nonwoven web. The intact area is that area between the apertures which has been referred as the raised or ridge area. The addition of a binder is beneficial in that the binder will not destroy the cloth-like texture and appearance of the nonwoven web but will fill the tiny voids within the ridges. This will prevent fluid from getting hung up and will provide a cleaner appearing cover. The binder may be applied at any stage of the process including during the formation

of the nonwoven web, after the web is formed or during the time of forming apertures or consolidated rings. The binder must be able to withstand body temperature heat without melting or rubbing off. Suitable binders include polyethylene glycol and the like.

Another feature of this invention involves adding a color toner or pigment either to the predetermined apertured area or to the entire top surface of the sanitary napkin. The addition of a color toner or pigment has several advantages. Most significantly, it tends to affect perceptual or visual masking of fluid during use of the sanitary napkin. The coloring may thus attenuate the typical red menstrual stain observable during use. It also improves visual perception by emphasizing, in the case of a perforated nonwoven cover material, that the product is effective in achieving a degree of physical separation between the body of the wearer and the absorbent which contains the menstrual fluid. The coloring also makes the perforations more distinct and noticeable. The coloring or pigment is selective and may involve all or a portion of the nonwoven cover material. The preferred colors include those in the blue, blue-green, and green areas of the visual light spectrum. Alternatively, the toning or coloring agent may be already present in the binder. In addition, instead of adding the toner or pigment to the cover layer itself, a similar effect could be achieved by adding the toner or pigment to the absorbent material directly under the cover layer. If a more conventional white coloration is desired, a whitening or opacifying agent may be used such as titanium dioxide (TiO<sub>2</sub>) up to a level of approximately 8% of the total weight of the cover material.

As previously indicated, the apertured nonwoven web 162 is suitable as the uppermost layer or cover of a sanitary napkin. The raised ridges 170, as shown in FIG. 12, face the peripheral area of the wearer when the nonwoven web is used as the cover material. Any sanitary napkin bearing a fibrous cover and currently known in the art may contain the apertured nonwoven web cover material of the present invention. In the simplest terms, a sanitary napkin contains an absorbent constructed of fibrous material or the like, a fluid-permeable cover and a fluid-impermeable baffle. A pressure sensitive attachment means is usually attached to the exterior surface of the baffle and serves to hold the sanitary napkin stationary to the crotch portion of an undergarment. The absorbent may include any of the well-known materials currently known in the art, including wood pulp fluff, multiple layers of cellulose wadding, cotton or rayon fibers, cellulose sponge, hydrophilic synthetic sponge, and the like. A superabsorbent can also be added to the absorbent to increase its capacity to hold body fluid.

The fluid-impermeable baffle is preferably a thin plastic film such as polyethylene or polypropylene of about one-half to three mils (i.e., thousandth of an inch) in thickness. Other thin flexible films such as polyvinylchloride, polyvinylidene chloride, natural rubber, etc., may be employed. Another useful material is a thin polyurethane film which may be of an open or close-cell construction on the interior. The film can be absorbent or nonabsorbent but should have a closed fluid-impermeable skin on at least the bottom surface.

Exemplary of such a baffle is a conventional 0.4 oz. per square yard spunbonded web with a 0.75 mil (0.00075 inch) film of an ethylene methyl acrylate (EMA)k, preferably with the EMA side toward the body of the absorbent material.

According to this invention, the sanitary napkin is provided with improved comfort and the ability to relatively rapidly transfer viscous menses from the apertured nonwoven web cover into the absorbent below.

The absorbent matrix described in U.S. Pat. No. 4,397,644 contains a principal absorbent component characterized by relatively high fluid retention and a second component including comfort enhancement capabilities positioned at least in part between the principal absorbent and the fluid-permeable cover or wrap. The second component, that is the comfort enhancing component, may be integrated with the apertured nonwoven web to provide intimate contact and densified regions. As a consequence, fluid transfer routes are established and fluid is conveyed to the principal absorbent component. This fluid transfer system may be used in association with the nonwoven web cover of the present invention.

FIG. 15 shows a possible design or pattern for the apertures formed on a predetermined area of the cover. The predetermined apertured area 176 extends approximately the entire length of the sanitary napkin and has a width less than the overall width of the napkin. The predetermined apertured area 176 has a width of between about 1 to 2 inches and is flanked by a pair of non-apertured areas 174. The predetermined apertured area 176 should preferably have a length which is greater than about 60% of the length of the sanitary napkin so as to cover the perineum region of the wearer. For example, it is possible to construct a sanitary napkin about 6 to 12 inches long which has a predetermined apertured area with a length which terminates about  $\frac{1}{4}$  of an inch from each end of the napkin.

In FIG. 16, an alternative design is shown wherein the predetermined apertured area is surrounded by a non-apertured area 180 which extends about its periphery. The non-perforated area can vary in size but preferably is about  $\frac{1}{4}$  to 2.0 inches wide. In FIG. 16, the predetermined apertured area has a length which is less than the entire length of the sanitary napkin.

Alternatively, a distinct registered pattern may be obtained on the cover of the sanitary napkin. An apertured pattern of approximately 1 to 2 inches wide need not extend the full length of the napkin, as shown in FIG. 15. Typically, the predetermined apertured area may terminate about  $\frac{1}{4}$  to 2 inches from either of the longitudinally extending sides of the napkin or from the opposite ends of the napkin. In the case of a registered pattern, the predetermined apertured area is preferably located in and near the center of the napkin so as to be aligned with the perineum of the wearer.

Referring to FIG. 17, a sanitary napkin 182 is shown constructed of a fluid-permeable cover 184, a fluid-impermeable baffle 186 and an absorbent 188 enclosed therebetween. The cover 184 is formed from a nonwoven web 190 which has two layers 192 and 194. The first layer 192 is composed of polypropylene spunbonded fibers and the second layer is a combination of pulp and polyethylene. Preferably, the spunbonded layer 192 forms the top layer which comes in contact with the body of the wearer. The two layers 192 and 194 can be laminated together. The web 190 has a predetermined apertured area 196 containing a plurality of apertures or holes 198. The apertures 198 extend completely through both layers 192 and 194 of the web 190. The predetermined apertured area 196 is surrounded by a non-apertured area 200 which makes up the remaining surface area of the cover 184.

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While the invention has been described in conjunction with several specific embodiments, it is to be understood that many alternatives, modifications and variations will be apparent to those skilled in the art in light of the foregoing description. Accordingly, this invention is intended to embrace all such alternatives, modifications and variations which fall within the spirit and scope of the appended claims.

We claim:

1. A sanitary napkin comprising:
  - a) an absorbent; and
  - b) a fluid-permeable cover positioned over at least one surface of said absorbent, said cover formed from a nonwoven web having a network of essentially unbroken thermoplastic fibers, said web having a plurality of apertures formed therethrough which extend completely through said cover and expose said absorbent, said apertures being located in a predetermined area representing less than about 80% of the surface area of said cover, and each of said apertures being surrounded by a consolidated ring formed of thermally set thermoplastic fibers, which in turn is surrounded by a raised area, wherein said apertures occupy about 30% to 55% of said predetermined area.
2. The sanitary napkin of claim 1 wherein said apertures occupy about 40% to 50% of said predetermined area.
3. The sanitary napkin of claim 1 wherein said web includes at least two layers, one of which is formed from spunbonded fibers and the other is a combination of pulp and polypropylene, and said plurality of apertures extend completely through both of said layers.
4. The sanitary napkin of claim 3 wherein said layers are laminated together.
5. The sanitary napkin of claim 1 wherein said predetermined area has a width of between about 1 to 2 inches.
6. The sanitary napkin of claim 1 wherein said predetermined area has a length approximately equal to the length of said sanitary napkin.
7. The sanitary napkin of claim 1 wherein said predetermined area has a length which is greater than about 60% of the length of said sanitary napkin.
8. The sanitary napkin of claim 1 wherein said predetermined area has a length which terminates about  $\frac{1}{4}$  of an inch from the ends of said sanitary napkin.
9. A sanitary napkin comprising:
  - a) a fluid-impermeable baffle;
  - b) an absorbent positioned on said baffle; and
  - c) a fluid-permeable cover cooperating with said baffle to enclose said absorbent, said cover positioned over at least one surface of said absorbent, said cover formed from a nonwoven web having a network of essentially unbroken thermoplastic fibers, said web having a plurality of apertures formed therethrough which extend completely through said cover and expose said absorbent, said apertures being located in a predetermined area which are void of any extraneous fibers, said predetermined area representing less than about 60% of

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the surface area of said cover, and each of said apertures being surrounded by a consolidated ring formed of thermally set thermoplastic fibers, which in turn is surrounded by a raised area, wherein said apertures occupy about 30% to 55% of said predetermined area.

10. The sanitary napkin of claim 9 wherein said apertures occupy about 40% to 50% of said predetermined area.

11. The sanitary napkin of claim 9 wherein said web includes at least two layers, one of which is formed from spunbonded fibers and the other is a combination of pulp and polypropylene, and said plurality of apertures extend completely through both of said layers.

12. The sanitary napkin of claim 9 wherein said raised areas surrounding said consolidated rings are designed to contact the body of the wearer.

13. A sanitary napkin comprising:

- a) an absorbent; and
- b) a fluid-permeable cover positioned over at least one surface of said absorbent, said cover formed from a nonwoven web having a network of essentially unbroken thermoplastic fibers, said web having a plurality of apertures formed therethrough which extend completely through said cover and expose said absorbent, said apertures being located in a predetermined area representing less than about 80% of the surface area of said cover, said apertures having side walls which are aligned approximately 90 degrees to an upper plane of said sanitary napkin and each of said apertures being surrounded by a consolidated ring formed of thermally set thermoplastic fibers, which in turn is surrounded by a raised area, wherein said apertures occupy about 30% to 55% of said predetermined area.

14. A sanitary napkin comprising:

- a) a fluid-impermeable baffle;
- b) an absorbent positioned on said baffle; and
- c) a fluid-permeable cover cooperating with said baffle to enclose said absorbent, said cover positioned over at least one surface of said absorbent, said cover formed from a nonwoven web having a network of essentially unbroken thermoplastic fibers, said web having a plurality of apertures formed therethrough which extend completely through said cover and expose said absorbent, said apertures being located in a predetermined area and which are void of any extraneous fibers, said predetermined area representing less than about 60% of the surface area of said cover, said apertures having side walls which are aligned approximately 90 degrees to an upper plane of said sanitary napkin, and each of said apertures being surrounded by a consolidated ring formed of thermally set thermoplastic fibers, which in turn is surrounded by a raised area, wherein said apertures occupy about 30% to 55% of said predetermined area, and
- d) a binder added to said fluid-permeable cover.

\* \* \* \* \*

**UNITED STATES PATENT AND TRADEMARK OFFICE**  
**CERTIFICATE OF CORRECTION**

**PATENT NO. :** 5,188,625

**DATED :** February 23, 1993

**INVENTOR(S) :** Thomas P. Van Iten, Howard A. Whitehead and Julie A. Schindel

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 11, line 36, after the word the delete the word "peripheral"  
and insert --perineal-- therefore.

Signed and Sealed this  
Thirteenth Day of September, 1994

Attest:



**BRUCE LEHMAN**

*Attesting Officer*

*Commissioner of Patents and Trademarks*

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Bernard Daskal  
Serial No. : 09/489,655  
Filed : January 24, 2000  
For : COLORED PANTY LINERS  
Examiner : Catharine L. Anderson  
Group Art Unit : 6092

RULE 1.132 DECLARATION OF RABBI SHMUEL NEIMAN

I, Rabbi Shmuel Neiman, declare as follows:

1. I am an Ordained Rabbi and make this declaration on behalf of Mr. Bernard Daskal in connection with the above identified Patent Application.
2. I have been a Rabbi for twelve (12) years and am extremely knowledgeable in the laws of *Taharas Hamishpachah*, which comprises a significant part of my Rabbinical duties. *Taharas Hamishpachah*, the laws of “family purity” in the Jewish religion, is comprised of a complex set of Scriptural commandments, Rabbinic decrees, and customs. In almost every Jewish community, there is at least one rabbi devoted to ruling on the myriad of issues that arise in observance of *Taharas Hamishpachah*. I am one of the Rabbis who makes such rulings for my community.
3. As relevant here, *Taharas Hamishpachah*, among other things, involves the physical separation between husband and wife whenever the wife experiences

uterine bleeding (typically attributable to menstruation) and the seven days immediately thereafter. During this period, the wife has the status of a “*Niddah*”, and as such, the wife is forbidden from having sexual relations with her husband. This period of separation culminates in the wife’s immersion in a ritual bath known as the “*mikveh*”, after which sexual relations may resume.

4. By Rabbinic Decree, a woman has the status of a *Niddah* if she experiences any vaginal staining, subject to certain exceptions. In this regard, a woman who experiences such staining will be a *Niddah* **unless**:
  - a. the stain is smaller than the size of a *gris* (a Talmudic-era measurement approximately the size of a penny);
  - b. the stain is discovered on a surface that is incapable of becoming *Tumay* (a prohibitive Scriptural status -- clothing, for example, is capable of becoming *Tumay* whereas the ground is not);
  - c. the stain is blue, green or yellow; or
  - d. the stain is found on a “colored” surface.
5. In practice, there are many circumstances in which a woman may experience staining during her non-menstrual cycle. In such cases, an issue arises as to whether the stain renders the woman a *Niddah*. When a question arises as to whether a stain falls under one of the exceptions enumerated in Paragraph 4 above, the couple does not make personal judgments with respect to the stain. Rather, a competent Rabbi is required to rule on whether the stain falls under one of the exclusions to the Rabbinic Decree discussed above. If the stain, although

non-menstrual, does not fall under one of the exceptions, then the Rabbi is compelled to rule that the woman has the status of a *Niddah*.

6. Mr. Daskal has asked me to explain what is meant by a “colored” surface as relevant to the colored-surface exception to the Rabbinic Decree discussed above. A significant number of Rabbis would rule that only dark colors, such as black, brown and red would fall under the colored-surface exception, as used in the context of the Rabbinic Decree concerning *Niddah*. Likewise, the same Rabbi would rule that other colors, such as blue, green, blue-green, pink, peach and other pastel and light colors, are non-colored surfaces as used in the context of the Rabbinic Decree discussed above.
7. Whether a colored-surface masks or does not mask a stain is irrelevant to the determination of whether a stain falls under one of the enumerated exceptions to the Rabbinic Decree discussed above. Rather, the reason that “colored” surfaces are excluded from these rules stems from an association with the Scriptural laws on “leprosy” found on clothing and other objects. Thus, for example, many Rabbis would recognize that a large brown stain on a blue-green surface capable of becoming *Tumay* would render the woman a *Niddah*. However, the same Rabbis would recognize that the same stain, on a black, red or brown surface, on the other hand, would fall under the colored-surface exception to Rabbinic Decree, and thus the woman would not be rendered a *Niddah*.
8. Recently, Mr. Daskal showed me his patent application, as identified above. I understood the application as disclosing a feminine hygiene pad with a top sheet

having a dark color, including black, brown and red, which are to be used by Jewish woman in connection with the Rabbinic Decree concerning *Niddah*. Such an invention addresses a problem that many Jewish couples in my community and elsewhere have faced.

9. Specifically, there are numerous instances in which non-menstrual stains could technically render a woman a *Niddah*. Since the Rabbinic Decree is concerned with discouraging sexual relations during a woman's menstrual period, but encouraging sexual relations directed at procreation during the inter-menstrual period, there has been a long felt need in the Jewish community for feminine hygiene pad product which would preclude the situation where non-menstrual stains may raise the question as to whether a woman is a *Niddah*. Throughout my years as a Rabbi, I have spoken with couples about ways to avoid these problems. For example, I have suggested to couples that the woman avoid wearing light colored garments, like skirts, underwear, or even bedding linen, during the inter-menstrual period. However, in my twelve (12) years as a Rabbi, I had neither seen any such product on the market nor thought of recommending the use of dark feminine hygiene pads prior to Mr. Daskal's application. Further, I have never been asked to inspect a black, brown or red feminine hygiene pad. Nevertheless, I have continued to work with couples to seek to solve this problem.
10. The black, brown and red feminine hygiene pad disclosed in Mr. Daskal's patent application solve this long felt need. As such, I would recommend to the women in my community that during their inter-menstrual period they use the feminine hygiene pads with dark colored top sheets, including in particular black, brown or red, disclosed in

Daskal's patent application to avoid even the possibility that a non-menstrual stain would render the woman a *Niddah*.

I declare that the foregoing is true and correct to the best of my knowledge.

Dated: January 14, 2002

By: Shmuel Neiman  
Rabbi SHMUEL NEIMAN  
[K"J SKR



UNITED STATES PATENT AND TRADEMARK OFFICE

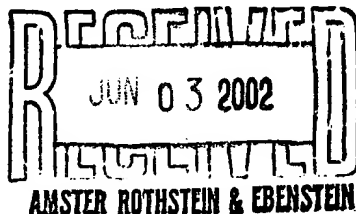
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/489,655	01/24/2000	Bernard Daskal	28951/3	6092

7590

05/29/2002

Charles R Macedo  
Amster Rothstein & Ebenstein  
90 Park Avenue  
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EXAMINER

ANDERSON, CATHARINE L

ART UNIT

PAPER NUMBER

3761

DATE MAILED: 05/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**FINAL**

AMSTER, ROTHSTEIN & EBENSTEIN	
DOCKETED	6/4/02
CLIENT	28951/3
DUE DATE	8/29/02 - 11/29/02
ACTION	FINAL O.R.
DKT BY:	REVIEWED BY:

**Office Action Summary**

Application No.

09/489,655

Applicant(s)

DASKAL, BERNARD

Examiner

C. Lynne Anderson

Art Unit

3761

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 January 2002.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 5-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 5-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed 23 January 2002 have been fully considered but they are not persuasive.

In response to applicant's argument that the purpose the present invention is not to mask stains with the darkly colored topsheet, but relates instead to the Rabbinic Decree concerning *Niddah*, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). While it may not be obvious to one of ordinary skill in the art at the time of invention to construct a sanitary napkin with a darkly colored topsheet for reasons relating to the Rabbinic Decree concerning *Niddah*, it would still be obvious for reasons relating to masking stains.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Datta et al. (4,801,494). Datta discloses the claimed invention with the exception of a dark colored topsheet.

Datta discloses an absorbent pad comprising an absorbent 30 and a permeable cover 10, as shown in figure 2. The cover 10 is formed from a fibrous material, the fiber being provided with a colorant, as described in column 3, lines 39-48. The colors disclosed by Datta are pastels such as peach and pink, but examples 1-5 show these relatively light colors as effectively masking stains caused by blood and discharge.

The light colors disclosed by Datta effectively perform the same purpose as the dark colors of the claimed invention. It is therefore obvious to one of ordinary skill in the art at the time of invention to make the cover 10 of Datta in the colors of the instant invention.

Claims 1 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Iten et al. (5,188,625). Van Iten discloses the claimed invention with the exception of a dark colored topsheet.

Van Iten discloses a sanitary napkin comprising an absorbent 188, a fluid permeable cover 184, and an impermeable baffle 186, as shown in figure 17. The cover 184 includes two layers, the first of which, layer 192, is comprised of a nonwoven web. This nonwoven web may be colored blue or green, as described in column 11, lines 6-23. The purpose of this is to mask stains caused by menstrual fluids.

The blue and green pigments disclosed by Van Iten effectively perform the same purpose as the dark colors of the claimed invention. It is therefore obvious to one of ordinary skill in the art at the time of invention to make the cover 184 of Van Iten in the colors of the instant invention.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to C. Lynne Anderson whose telephone number is (703) 306-5716. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dennis Ruhl can be reached on (703) 308-2262. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3590 for regular communications and (703) 306-4520 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1148.

Application/Control Number: 09/489,655

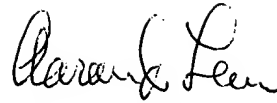
Page 5

Art Unit: 3761

WA

cla

May 21, 2002

A handwritten signature in cursive script, appearing to read "Aaron J. Lewis".

**Aaron J. Lewis**  
**Primary Examiner**

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Substitute for form 1449A/PTO

# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

*(use as many sheets as necessary)*

Sheet 1 of 2

**Complete if Known**

<b>Application Number</b>	09/489,655
<b>Filing Date</b>	1/24/00
<b>First Named Inventor</b>	Bernard Daskal
<b>Art Unit</b>	3761
<b>Examiner Name</b>	C. Anderson
<b>Attorney Docket Number</b>	28951/3

**U.S. PATENT DOCUMENTS**

[illegible]

## FOREIGN PATENT DOCUMENTS

[illegible]

Examiner  
Signature

Date Considered

5/21/02

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kind Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet

2

of

2

**Complete if Known**

Application Number	09/489,655
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<b>Filing Date</b>	1/24/00
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First Named Inventor	Bernard Daskal
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Group Art Unit	3761
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Examiner Name	C. Anderson
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Attorney Docket Number	28951/3
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**OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS**

[illegible]

Examiner  
Signature

Date \_\_\_\_\_

Considered

5/21/02

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Bernard Daskal  
Serial No. : 09/489,655  
Filed : January 24, 2000  
For : COLORED PANTY LINERS  
Examiner : Catharine L. Anderson  
Group Art Unit : 6092

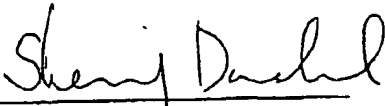
RULE 1.132 DECLARATION OF SHERRY DASKAL

I, SHERRY DASKAL, declare as follows:

1. I am a female practitioner of *Taharat Hamishpachah* and make this declaration on behalf of Mr. Bernard Daskal in connection with the above identified Patent Application. I am also married to Mr. Bernard Daskal, the named inventor on the subject Patent Application.
2. I recently gave birth to my second child. During both of my pregnancies, I experienced light colored non-menstrual vaginal discharges, including, for example, leukorrhea (i.e., a whitish vaginal discharge).
3. During my first pregnancy, to protect my undergarments from being stained by these non-menstrual discharges, I frequently wore a white feminine hygiene pad with a white topsheet. As a result, my husband and I had to seek the advice of our local Rabbi to determine if I would be rendered a *Niddah* by such stains.

4. After my husband conceived of the idea for a black top sheet in a feminine hygiene pad and filed the present Patent Application, we learned that McNeil-PPC Inc. sold a product which embodies my husband's invention. To protect my undergarments from being stained by these non-menstrual discharges, I frequently wore McNeil-PPC's feminine hygiene pad having a black topsheet. Since the leukorrhea fell on a black surface, this stain clearly fell under the "colored" surface exception to the Rabbinic Decree concerning *Niddah*. Accordingly, it was not necessary for my husband and I to consult a Rabbi as to whether this stain rendered me a *Niddah*.
5. On several occasions, I noticed that the leukorrhea and other light stains were not masked by the black feminine hygiene pad. Rather, these light colored stains were very noticeable on the black topsheet of the feminine hygiene pad.

I swear that the foregoing is true and correct.

  
Sherry Daskal

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